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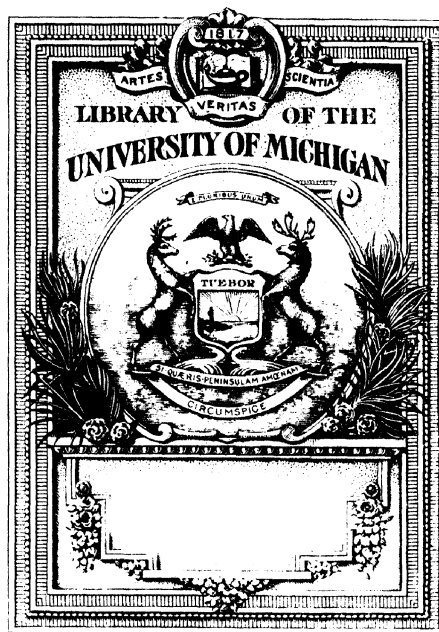
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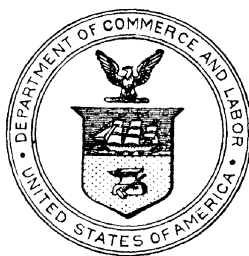


DEPARTMENT OF COMMERCE AND LABOR

BUREAU OF STATISTICS : : : : : O. P. AUSTIN, Chief of Bureau

COMMERCIAL PORTO RICO IN 1906

Showing Commerce, Production, Transportation, Finances, Area, Population, and Details of Trade with the United States and Foreign Countries during a Term of Years



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COMMERCIAL PORTO RICO IN 1906.

INTRODUCTION.

Commerce and commercial opportunities and prospects in Porto Rico have rapidly developed during recent years, and commercial relations between the island and the mainland of the United States have been greatly stimulated through the natural interchanges growing out of a close relationship between tropical and Temperate Zone sections and peoples. No class of products has enjoyed a greater popularity among or realized a greater growth in demand by the people of the United States than those produced in the tropical sections of the world. The value of tropical and subtropical products entering the ports of the United States has quadrupled since 1870 and doubled in the last twenty years, while the quantity of many of the important tropical products imported has grown in even greater proportion. The demand for such standard articles of tropical production as sugar, coffee, cacao, fibers, tobacco, fruits and nuts, gums, cabinet woods, dyewoods, and other articles of this character increases steadily and rapidly in the United States. So, when Porto Rico, a producer or possible producer of these articles, found a ready market in a country of 80 million consumers, her production of the more important of them was immediately stimulated, and soon there followed similar increases of production in the less important industries of this character. In turn followed the improvement of roads and facilities for transporting these natural products to the seaboard and thence to the markets of the United States. On the other hand, the people of Porto Rico, requiring manufactures and foodstuffs, the product of the Temperate Zone, have applied their increased earnings and the results of their increased sales in the United States to increased purchases of the products of our farms and factories.

The result of this natural interchange and the stimulus given to production in Porto Rico is seen in the fact that the total value of merchandise leaving the ports of Porto Rico for the markets of the world has more than doubled in the last decade, while the value of merchandise passing between the island and the United States is ten times as great as a decade ago, both in products sent to this country and merchandise purchased therefrom.

These conditions of increased markets in the United States for Porto Rican products and increased interchange of products between the people of that island and the people of the mainland have greatly stimulated the interest of American capitalists, investors, and producers, and many millions of American capital have been invested in the various lines of industry in Porto Rico—the production of sugar, tobacco, citrus fruits, pineapples, coconuts, coffee, and fibers, and experimentally in many other lines. These investments have in turn stimulated the development of roads, railways, and other facilities of transportation, and have at the same time stimulated the interest of American citizens in conditions in the island and its possibilities as a field for future investment of American capital and American energy.

GEOGRAPHY.

The island of Porto Rico, ceded to the United States by Spain under the treaty of December 11, 1898, is the easternmost of the four larger Antilles (Cuba, Haiti, Porto Rico, and Jamaica), being separated from the island of Haiti on the west by Mona Passage and from the Virgin Islands on the east by Virgin Passage. It

lies about 450 miles east and slightly south of the southernmost point of Cuba, 75 miles east of Haiti, and 40 miles west of the Danish island of St. Thomas, the nearest of the Virgin group, while Culebra Island, which politically belongs to Porto Rico, is only 18 miles from St. Thomas. It is well within the Tropics, the eighteenth degree of north latitude being almost exactly coincident with its south coast, while the north coast coincides almost as exactly with 18° 30'. It extends from 65° 38' to 67° 15' west longitude, its greatest length being 112 miles, while its average width is 36 miles. Its west coast runs almost exactly north-south, so that, were it not for its somewhat tapering east end, the island would be an almost perfect rectangle. The area, as given in Bulletin 302 of the United States Geological Survey (Series F, Geography 58), is 3,435 square miles, which includes the four main adjacent islands—Mona Island, in Mona Passage; Caja de Muertos, a little southeast of Ponce; Vieques or Crab Island, facing the middle of the east coast, and Culebra Island, north of the preceding—and a number of smaller islands close to the northeast corner. This area is about three-fourths that of Connecticut.

For purposes of administration and of elections the island is divided into seven districts, called, after their capitals, Aguadilla, Arecibo, Guayama, Humacao, Mayaguez, Ponce, and San Juan.

TOPOGRAPHY.

The island is part of the great volcanic range that constitutes the Greater and Lesser Antilles, rising steeply from great oceanic depths. The 100-fathom line is everywhere close to the shore, especially on the north, and a little farther out, less than 100 miles offshore, is the "Brownson Deep," with a depth of 4,561 fathoms, hardly exceeded anywhere on the globe. Thus the backbone of Porto Rico is formed of a range of volcanic rocks, running due east and west, about 12 miles from the south shore and 24 miles from the north shore. From the center of the island a spur of the main range runs northeastward, terminating in the Luquillo range, which contains El Yunque (the anvil), the highest summit on the island, whose height is reported to be 3,790 feet. The central axis is flanked on the north and south by limestone deposits raised above sea level by the upthrust of the central mass and dissected by erosion into foothills. As usual in limestone countries, much of the drainage in the limestone area is underground. Rivers frequently disappear in chasms, to reappear at some distance. As this underground drainage is constantly shifting, many of the channels have been converted into caves. Much of the island is honeycombed with such caves, which are of economic interest in that they have served for ages as the abode of enormous numbers of bats, whose droppings, forming excellent guano, in many cases cover the floor to a considerable depth. The most famous of these caves is that of Pajita, at Lares. Erosion has been so active and so long continued, both on the volcanic and on the limestone rocks, that no trace of an original crest is visible, the entire surface of the island being cut up into a multitude of cones and domes.

The volcanic rocks weather into a red clay, incredibly tough and sticky, which covers the unaltered rock often to a depth of 100 feet. Highly objectionable as this clay is to the road builder, through its imperviousness to water, it has actually been the salvation of the central districts, which, in their deforested condition, would long ago have been deprived of their soil but for this quality.

The slopes formed by this soil are of surprising steepness, often nearly vertical, and, what is still more surprising, are cultivated, the most productive crops of coffee and tobacco being in some cases raised on declivities on which an American farmer would not risk life and limb. Cultivation in such cases is entirely by hand, the left hand grasping a tree while the right wields the hoe or machete.

The soils in the limestone region are wholly different, being light and porous, and so permeable to water that, instead of being water-logged, they are overdrained. In such cases irrigation is frequently necessary.

The island is encircled by a narrow belt of playas or plains, formed of the alluvium brought down by the streams from the interior. Only on the north coast, from San Juan westward to Arecibo and eastward to Loiza, does this plain attain any notable width, of some 6 or 7 miles; at the south, with frequent interruptions, it is only some 3 to 5 miles wide, and elsewhere it is almost entirely lacking. Prolongations of it extend up into the valleys of the larger rivers. These plains are the sugar lands, which at the present day constitute the principal wealth of the island.

CLIMATE.

The climate of Porto Rico is remarkable for its freedom from extremes. The highest temperature recorded in 1902 on the whole island was 98° F., at Morovis on June 4, at Cayey on August 19 and other dates, and at Hacienda la Perla in the Luquillo Forest Reserve on September 4. The highest temperature ever recorded was 100.8° F., in May, the lowest 56.1° F., in December. For a long period the average annual temperature has ranged on the northern coast from 78° to 82°. The coolest month in the year is January, with a temperature averaging 75°, while in August, the hottest month, the average is about 82°. While the variation from month to month is slight, there is considerable difference according to altitude. The temperature in the interior, especially on the higher levels of Aibonito, Cayey, and Utuado, is much lower than along the coast.

One climatic factor of paramount importance is the constant trade wind. Throughout the island, vegetation is constantly affected by this steady current of air, always from the east, so that the trees on the hilltops and in other unprotected spots are stunted and bent to the westward. Successful cultivation of fruit, coffee, cacao, and similar products is dependent on windbreaks. It is only in sheltered situations that luxuriant tree growth is found. A series of windbreaks of such trees as mango, casuarina, etc., would be of inestimable value to the island. In the production of coffee it is not the shade which the sheltering tree affords that is of benefit so much as the protection from wind and other injurious influences. Hurricanes as a rule occur only during the months of August and October, when the eastern trade winds become unsteady and uncertain.

Unpropitious as the trade winds are to some extent to the forest vegetation, their effect on human beings, in affording a constant supply of cool, pure salt air, is an unalloyed benefit, especially in the western part, where they are less violent. The nights are never hot, and even the heat of the day is tempered by the constant breeze.

Heavily moisture laden from the warm ocean, the trade winds press against the northeastern mountains, which quickly condense the moisture they bear, and heavy showers of sudden occurrence but short duration result. These downpours continue as far as the center of the island. Crossing the summits at that point, the winds enter a region of higher temperature, and being thus enabled to carry a larger amount of moisture they let fall comparatively little rain over the southern and western slopes.

RAINFALL.

The island may be divided into four zones, according to the amount of rainfall received: (1) The Luquillo range, with an average annual rainfall of 139.33 inches (maximum in 1901, 168.76 inches); (2) the central range and the belt immediately adjoining it on the

north, as far west as Adjuntas, with a maximum of 123 inches; (3) the northern coast belt, with annual rainfalls varying from 55 to 100 inches; (4) the southern coast belt, with an average of 20 inches.

The southern coast is called the arid coast. Not only is the rainfall there small, but it is very irregularly distributed. There is said to be an authentic record at Guayama, at the southeast corner of the island, of 13 months, chiefly in 1893, when not an inch of rainfall was recorded. This record is all the more remarkable when contrasted with the fact that on the top of El Yunque, in the Luquillo range, only 32 miles northeast of Guayama, twelve hours without rain are the exception. The records at Cabo Rojo, near the southwest corner of the island, show one period of three years in which no rain fell. The effect of this natural dryness is further accentuated by the porous nature of the limestone soil on the southern coast, through which the rainfall received by the land quickly drains off.

This great difference in the rainfall between the northern and southern slope of the island manifests itself not only by the perpetual muddiness of the roads on the north side as compared with their dry and dusty condition on the south, but especially by the vegetation and the regimen of the rivers. On the north, near the mountain summits, the flora is always bright and verdant and of tropical luxuriance, and the rivers carry large volumes of water. In the south, especially near the southwestern extremity of the island, the trees are dwarfed hardwoods; cacti, century plants, and acacias abound, and the vegetal as well as the topographic characteristics are similar to those of the semiarid Southwest of the United States. The river beds are almost dry and are full of rocks and boulders. Cultivation on the south coast would be precarious without irrigation. Fortunately, the conditions for successful irrigation are almost everywhere present.

The Luquillo range is not only the wettest spot on the island, but one of the wettest on the globe, much wetter than any part of the United States, where the maximum of 100 inches is attained only in a narrow strip along the Pacific coast of Washington and Oregon. There are few nights in the year when no rain falls at La Perla, the nearest meteorological station. The forests on the Luquillo range are dripping with moisture all the time.

At San Juan the rainy season lasts from April to November, while the remaining months form the dry season, so called, though even then the minimum is 1.8 inches in February. The same distribution of the two seasons applies with little variation to the entire island.

The United States Weather Bureau maintains about 15 stations on the island, as a part of an extensive West Indian service. During the hurricane season—from July to October, inclusive—observations are made at least twice a day. The central station is at San Juan, and from it messages and warnings are distributed through the cooperation of the bureau of insular telegraph and the insular police. The Weather Bureau also maintains a "Climate and crop" service for the island, for which there are about 35 voluntary observation stations. Weekly reports on crops and agricultural interests are made, which furnish the material for the weekly crop bulletin published in English and Spanish and gratuitously distributed.

MAPS AND SURVEYS.

The United States Coast and Geodetic Survey has completed the survey of the coast of Porto Rico, the results being embodied in 14 sheets. The price per sheet is 50 cents, except for Nos. 909, 916, 922, and 932, which cost 25 cents apiece. They may be obtained from the Coast and Geodetic Survey, at Washington, or from one of its numerous agencies.

The interior has not yet been accurately surveyed, with the exception of the soil survey from Arecibo to Ponce (embracing a strip 10 miles wide, 5 miles on each side of the military road), the railway surveys, and the road surveys. The boundaries of properties are imperfectly known, occasioning great inconvenience in their transfer. A bill has been prepared providing for a cadastral survey and a system of title registration on the Torrens plan. Much of the public land has been occupied by private persons for generations and such occupation establishes title.

WATER RESOURCES.

From the distribution of the rainfall, the status of the rivers may be readily inferred. Evidently a little island 36 by 100 miles in extent can not have any large rivers. Nevertheless, the great humidity of the north coast, combined with the steepness of the slopes and the impervious character of the soil over a large part of the island, causes the volume of the northern rivers to be larger than would be expected of rivers with so small a drainage area. On the south, the water courses are equally numerous, but contain very little water in their lower reaches.

The largest river on the island is the Rio Loiza, which rises in the Sierra de Cayey, not far from the southeast coast, and empties into a lagoon a little to the east of San Juan. Having the largest catchment basin, in a region of exceptional humidity, it exceeds the other rivers in volume even more than in length. Rio Bayamon discharges opposite the tongue of land on which San Juan is built, Rio Manati some 35 miles farther west, and Rio Arecibo near the town of Arecibo. A multitude of small rivers rush down to the sea from the rain-drenched slopes of the Luquillo range. Owing to their exceptional purity, their large volume and high grade, and their closeness to the coast, these rivers promise to be of special importance in furnishing water for domestic purposes and for electric power to the coast cities.

RIVER SOURCES AND BASINS.

The Central Cordillera of Porto Rico having an average elevation of 2,500 feet, and its crest being distant some 13 miles from the south coast and some 23 miles from the north coast, it follows that the rivers on the south have a fall of about 192 feet in a mile and those of the north coast a fall of about 109 feet in a mile. These figures, of course, are mere approximations, but they suffice to show the vast reservoir of water power stored in Porto Rico. The average rainfall on the south side is 50 inches, while on the north side 75 or even 100 inches are not uncommon. The meaning of this may be inferred from the fact that 50 inches is a higher average than that recorded in most of our Southern States east of the Mississippi, while the maximum of 100 inches is attained only in a narrow border of the Pacific coast of Washington and Oregon.

The water-power resources of Porto Rico were studied by H. M. Wilson, from whose report (United States Geological Survey Water Power and Irrigation Papers, No. 32) the following statements are taken.

The valleys are usually very deep. Thus within 5 or 6 miles to the north of the main summits, the river bottoms are at altitudes of about 1,000 feet, while the summits of the dividing ridges are at elevations of 2,000 to 2,500 feet. Again, within 5 miles of the coast the river beds are at elevations of 50 to 100 feet above sea level, while the summits of the dividing ridges reach altitudes of 1,000 to 1,500 feet. These dividing ridges are often maintained to the ocean shore, are high, narrow, and A-shaped, and are separated one from the other by deep V-shaped valleys eroded by numerous streams flowing in every direction throughout the interior of the island.

Because of the steepness of the slopes, especially on the northern coast, and the impervious character of the clay soil which covers them, the proportion of rain which runs off makes these rivers of even larger volume than would otherwise be expected under corresponding circumstances. Into the northern ocean flow 12 streams of considerable magnitude; toward the west coast flow 4 of relatively equal size; into the eastern sea flow 5 of less magnitude, and into the southern sea flow 17 of considerable size but of comparatively small perennial volume. In addition, there are between 1,200 and 1,300 streams and branches of less volume, but yet of sufficient size to bear separate names.

Of the 38 larger rivers above enumerated, each has its source high among the summits of the Central Cordillera. Those flowing to the north and west are characterized by precipitate descents of 1,000 to 2,000 feet in the first 5 miles of their headwaters. Thereafter they flow more leisurely and with consequent increased size to within 5

miles of the coast. There they emerge practically at sea level in long, meandering curves through the alluvial plains about their mouths. Because of the lowness of their grades near the coast and their resulting low velocity, all are of considerable width and moderate depth in the levels. A few miles inland, where they flow over steep, rocky beds, their channels are narrow and often confined by precipitous rocky walls, their width is of but comparatively few feet, their depth often less than a foot, and their velocities so high as to render them veritable mountain torrents.

On the southern coast the larger rivers have bed widths as great as those entering the northern and western coast. Their lengths, however, are so short for the same fall that they are not characterized by the long stretches of low, meandering grade found near the coast in the plains to the north. They emerge, on the contrary, from the mountains at but 3 to 5 miles from the shore line at altitudes of 200 to 400 feet, and as a result this elevation is passed with comparatively steep slopes over rocky or boulder-strewn channels. Above these coastal stretches and within the mountains, the rivers are so short for the relatively great heights which they fall that their dimensions are little greater than those of the smallest brooks which flow from the hill summits in the Rocky Mountains.

The rivers of the north and of the west are more like the streams of humid regions in the United States, as their perennial discharge is always fairly well maintained. The larger of these rivers have at low-water stage bed widths of 150 to 200 feet, average depths of 2 to 4 feet, and minimum discharges of 250 to 1,500 second-feet. In time of flood, although these rivers attain maximum discharges of 10,000 to 20,000 second-feet, these volumes are not greatly in excess of the flood discharges of the rivers of the southern slope.

The width of the stream bed of the southern rivers is often as great as that of the northern, but owing to the infrequency and small amount of rainfall and the relatively porous character of the soil reducing the percentage of run-off, as well as to the smallness of their catchment basins, they discharge minimum volumes of but 50 to 100 second-feet. These streams resemble the rivers of our western plains in that their beds are nearly dry the larger part of the year, but are yet of sufficient capacity to discharge great volumes during the sudden floods to which they are subject. The beds of these rivers, even near the coast, are boulder strewn and are from 100 to 300 feet in width. The depth of their banks is 10 to 20 feet, yet the minimum surface width of such streams is but 50 to 100 feet and their average depth $\frac{1}{2}$ to $1\frac{1}{2}$ feet during their minimum discharge. In maximum flood such streams reach discharges aggregating 5,000 to 10,000 second-feet, in some cases even more, as shown by their wide, rocky, dry beds.

GAUGINGS OF RIVERS.

To convey a clearer idea of the size and regimen of the rivers of Porto Rico, the following results of rough gaugings of a number of streams are given. As these streams were observed in the middle of the dry season, their discharges may be taken as showing the average minimum volume which they carry.

The Rio Loiza, probably the largest on the island, was gauged near Carolina, about 15 miles east of San Juan. Its surface width was 220 feet, its average depth 3 feet, and its minimum discharge 1,600 second-feet.

The Rio Canovanas, above its junction with the Loiza, 5 miles east of Carolina, has a bed width of 60 feet, average depth 2 feet, average velocity about 5 feet per second, and discharge 600 second-feet. This amount is to be added to the discharge of the Loiza to give the volume of the latter at its mouth.

At Caguas, about 20 miles by road south of San Juan, and 230 feet above sea level, the Rio Caguitas, one of the principal branches of the Loiza, flows in long, meandering curves through a level alluvial valley, and carries a minimum volume of about 50 second-feet. A few miles beyond, and in the same valley, the Rio Turabo, another branch of the Loiza, is of similar character and discharges an equal volume.

The Rio Carite, at the crossing of the military road, 36 miles from San Juan, and in the vegas or plain of Cayey, has an elevation of about 1,180 feet above sea level. This is a branch of the Rio Plata, and its discharge at this point is about the same as those of the two last-mentioned streams, namely, 50 second-feet, though because of its greater altitude, and consequently greater slope, the cross section of its channel is smaller.

The Rio Plata, at a point 4 miles northwest of Cayey, at an altitude of 810 feet, has a bed width of about 100 feet, a depth of $1\frac{1}{2}$ feet, and a discharge of 230 second-feet.

South of the main divide at Aibonito, the Rio Calabazas, 4 miles east of its junction with the Rio Coamo at Coamo and at an elevation of 480 feet, has a velocity of 3 feet per second and a discharge of but 25 second-feet.

The Rio Coamo, at the city of that name, and at 360 feet above sea level, has a bed with a width of 100 feet, though its surface width is somewhat less. Its depth is but 4 inches and its discharge 100 second-feet.

The Rio Descalabrado, halfway between Coamo and Juana Diaz, at an elevation of 260 feet, has a comparatively dry bed of 120 feet width. Its velocity is but 2 feet per second and its discharge 40 second-feet.

The Rio Jacaguas at Juana Diaz, elevation 160 feet, has a bed width of 180 feet, a minimum surface width of 50 feet, and a discharge of 50 second-feet.

The Rio Portugues at Ponce has a bed width of 175 feet, yet its minimum discharge is but 60 second-feet. Its total available discharge is considerably greater than this, but the remainder of its volume is diverted a few miles above for irrigation and for the water supply of Ponce. The same is in a measure true of the Rio Jacaguas, a portion of the discharge of which is utilized for irrigation above the military road.

The Rio Magneyes, at the crossing of the road from Ponce to Adjuntas, 5 miles north of Ponce, elevation 400 feet, has a minimum discharge of 35 second-feet.

The Rio Portugues, at the crossing of the above-named road, near its headwaters, 9 miles north of Ponce, elevation 1,000 feet, has a minimum discharge of 25 second-feet.

The Rio Arecibo, near its headwaters at Adjuntas, altitude 1,440 feet, has a minimum discharge of 40 second-feet. A few miles lower down, at Utuado, its discharge is 100 second-feet. This river, like the others described, discharges relatively increased volumes in its lower reaches near the coast.

The Rio Yahueca, one of the headwaters of the Rios Blanco and Pietro, or, as they are called near the coast, the Rio Añasco, has, at an elevation of 1,440 feet, about 5 miles west of Adjuntas, a minimum discharge of 20 second-feet.

The Rio Blanco, into which the Rio Yahueca discharges, at an elevation of 1,350 feet, about 8 miles west of Adjuntas, has a minimum volume of about 50 second-feet.

The Rio Culebrina, near the middle of its course at San Sebastian, elevation 140 feet, has a bed width of 125 feet, a considerably less surface width, a velocity of 4 feet per second, and a minimum discharge of 100 second-feet.

The Rio Añasco, halfway between San Sebastian and Añasco, at a point about 8 miles from the latter city, has, at an elevation of 80 feet, a bed width of 150 feet, a surface width of 75 feet, a depth of $1\frac{1}{2}$ feet, and a discharge of nearly 600 second-feet. The same river below the city of Añasco flows through a level playa and has an easy, meandering course, its grade being so low as to render its velocity very slow. Its surface width is here about 200 feet, its depth 4 to 8 feet, and its discharge about 1,000 second-feet.

IRRIGATION.

All the crops which the soil will produce can be grown over three-fourths of the extent of the island with the aid of the abundant rainfall alone. The other one-fourth, including all the region near the coast from Cabo Rojo, on the extreme west, to beyond

Guayama, on the east, must be irrigated if the soil is to produce the full measure of crops of which it is capable. The total area of these lands is, however, relatively small. A portion of this one-fourth, or, in round numbers, of the 800 arid square miles, is included within the steepest portions of the southern mountain slopes. Another portion consists of the rugged foothills, which, as they rise in detached summits, it is impossible to reach with a gravity water supply. Still another portion of this area consists of the alluvial plains or playas, which produce fairly abundant crops with the aid of the moisture which they draw through their roots from a soil which is but a few feet above the level of the sea. Of the 450 square miles included within the southern back-coast border perhaps 150 consist of playa lands, which need not be irrigated, and 300 more consist of detached and inaccessible hills and of the precipitous slopes of the sierra. There remains accordingly perhaps a total of 150 square miles which would add to the agricultural resources of the island if artificially provided with water.

The soil on these lands is in every case of the very best kind for agriculture with irrigation. It is usually an open, porous, limestone soil of sandy and gravelly texture, mixed with a little earthy loam. It is fairly deep and is underlain by a porous limestone or coral, which affords the best drainage and probably renders it safe from the danger of producing alkali. Much of it is already under cultivation in maize, beans, pease, and other lentils in the southwestern extremity of the island, and small vegetables and fruits elsewhere.

While the precipitation is insufficient, the perennial flow of the streams is unusually abundant for a land requiring irrigation. The minimum discharges of these streams where they would be diverted in the foothills are moderate in amount and yet nearly sufficient for the irrigation of such areas as they drain. Moreover, the flood discharges of these streams occur at frequent intervals throughout the year, but are especially well distributed throughout the summer or rainy season. They afford an abundant surplus for storage. The shapes of the smaller parting valleys and of the lower canyons through which the rivers emerge from the mountains give every indication that abundant opportunities will be found, on fuller investigation, for the construction of storage reservoirs at moderate expense.

The Spaniards, who in the past have been the principal landholders, are thoroughly familiar with the requirements and processes of irrigation as practiced in Spain. Quick to appreciate the advantages of the artificial application of water, they have already constructed numerous ditches of moderate sizes, and much of the more valuable sugar land, especially between Guayama and Ponce, is cultivated exclusively by the aid of irrigation. Much as has been done already in this direction, there is still room for further development. Only a portion of the available water supply has been appropriated, and but a small portion of irrigable lands is artificially supplied with water.

Such works as have been noted correspond in general type to those seen in Mexico, but because of the greater influence of European ideas in this island their construction is of a more substantial character and more nearly approaches that prevalent in Spain and Italy. The diversion works are in every instance of the crudest kind: simple wing dams of rock and boulders thrown out into the beds of the streams to direct a portion of the waters into the heads of the ditches. These are carried away by the floods, requiring to be immediately replaced. On the other hand, the head works, falls, regulating gates, and other dividers, are constructed in the most substantial manner of massive masonry.

In strong contrast to this type of construction are the minor distributaries observed in some of the cane fields. These were built by owners who had great grinding and boiling machinery for the treatment of their cane, and were imbued to a certain extent with American ideas. Their distributaries consist of a series of temporary trestles and shallow wooden troughs or gutters made of lumber brought

from America. These tap the hillside ditches at such points as seem desirable, and are roughly placed so as to carry the water to such portions of the field as immediately require it. After irrigation in such localities the trestles and troughs are removed and utilized in irrigating other portions of the same fields. This practice is resorted to in order to reach the numerous little detached rolling hills 10 to 20 feet in maximum height, into which the surface of the sugar lands is broken. In other localities, where practicable, these lands are irrigated by direct diversion from the main ditches of laterals dug in the earth and ramifying to every portion of the field to which gravity will conduct the water.

Immediately to the west of Juana Diaz the most important irrigation work noted on the island is a ditch from the Rio Jacaguas. The point of diversion is in a narrow gorge, well up in the foothills, about 5 miles above the military road. The ditch thence is about 5 feet in width at the top, 3 feet in depth, and is excavated in the earth slopes of the hillsides, around which it is well graded. This ditch is divided into numerous distributaries, all of the simplest earth construction, which convey its waters to every part of the cane fields.

Farther west another irrigation ditch is carried under the military road in an inverted siphon of masonry, which is similar in all respects to such structures seen in India and southern Europe.

Near this place a rough wing dam of rock diverts a stream into a substantial masonry conduit, whence it is led along the banks of the river through a circular masonry pipe 30 inches in diameter and 10 inches thick, in many places close to the river bank. To protect it from the erosive action of floods, the conduit is supported on a heavy retaining wall of masonry until at some distance a sufficient grade is attained to carry it away from the banks of the stream.

WATER POWER.

The volume of water available for utilization either as supply for domestic purposes in the various cities or for conversion into power is relatively great. While this is especially true of the north side of the island, it applies also in a measurable degree to the south side, for while on the latter side the streams do not discharge large volumes during the dry season, there is more water in them near their sources in the mountains than reaches the lowlands, because of loss through evaporation and percolation.

All of the cities of any size are provided with some form of domestic water supply, but in no case commensurate with the requirements of a tropical climate. Not only is the supply for domestic use insufficient, but in most cities there is practically no supply available for fire engines, for the flushing of house plumbing, or for washing streets and flushing gutters. Since the American occupation, efforts have been made to improve these conditions. The water supply of San Juan is now excellent. No difficulty, either of an engineering or a financial nature, should be found in supplying all the cities with abundant quantities of wholesome, potable water. Near every city a supply of water is available in one or more of the rivers, and this can invariably be diverted at an altitude sufficient to permit its being carried by gravity into the cities. The natural conditions in nearly every case are such as should insure the procurement of a good water supply at relatively small cost.

The opportunities for the generation of power are also abundant, and the use which has thus far been made of them is insignificant. The amount of water available for conversion into power is evident from a consideration of the discharge of the various streams and the great height from which the water falls in a comparatively few miles. Streams which have a minimum volume of 50 to 150 second-feet at an altitude of 1,000 to 1,500 feet fall to within 100 feet of sea level in a distance of 5 to 10 miles. Consequently, there are many steep rapids, cascades, and high falls in their courses, and it is necessary to convey the water in flumes or ditches but relatively short distances to obtain such head as will produce all the power of which use can be made. Finally, the distance between the banks of these streams within the mountain gorges is so small and the beds are composed so largely of rocks and boulders that there will be little difficulty or expense connected with the diversion of the water through dams and head works.

POPULATION.

With the exception of the Luquillo range, now set aside as a forest reserve, there is hardly a spot on the island of Porto Rico that does not admit of intense cultivation. With a remarkably equable climate, free from the extremes of both heat and cold, with abundant humidity and ample water power, it affords all the elements for the maintenance of a dense population. Its attractions as a winter resort seem likely to attract Americans, both as visitors and as permanent residents. The natural advantages, despite all the drawbacks of a somewhat primitive social organization, have already induced the development of a population denser than that of most countries.

The population of Porto Rico according to the census of 1899 was 953,243, and the area, as recently measured, is 3,435 square miles, making a density of 277 to the square mile. An idea of this density may be formed by the following comparison, showing the population per square mile in various States and countries:

North America:		Europe:	
United States—		Spain.....	96
Iowa.....	40	France.....	188
Virginia.....	46	Germany.....	280
Illinois.....	86	Italy.....	294
Ohio.....	102	United Kingdom.....	346
Pennsylvania.....	140	Netherlands.....	426
New York.....	153	Belgium.....	589
New Jersey.....	250	Asia and Africa:	
Massachusetts.....	349	China.....	266
West Indies—		Japan.....	311
Windward Islands.....	335	Java.....	568
Martinique.....	535	Egypt (habitable part).....	750
Barbados.....	1,192		

The European countries above named are largely manufacturing communities, which draw on less densely settled countries for much of their food and raw material. China, however, supplies at present almost all its own necessities, and so, until recently, did Japan. Egypt enjoys unusual advantages in its exclusively alluvial soil, its practical absence of rainfall, its unlimited supply of water for irrigation, and its close proximity to the European markets. Java offers perhaps the closest parallel to Porto Rico. With a density equal to that of Java, Porto Rico would have over 2 million inhabitants. No doubt the volcanic soil of Java exceeds that of Porto Rico in fertility, but it is also true that a good part of Java is not yet cultivated. That the fine water power of Porto Rico will eventually lead to the development of considerable manufactures seems certain. The mining industry is bound to revive. The banana, which forms a large constituent of the Porto Rican's diet, yields more nutriment to the acre than almost any other plant, it having been calculated that the area which suffices to produce 33 pounds of wheat or 99 pounds of potatoes will produce 4,000 pounds of bananas. The rapidly expanding market of the United States, whose ports are within a few days' sail from the island, will afford an outlet of unlimited capacity for the island's products.

Governor Allen, in his first report, expressed the opinion that when all the agricultural and industrial resources are fully utilized the island may not only "support in comfort the million of people which we now have, but five times as many."

The island is not only densely but evenly settled. The density of population of the seven departments into which it is divided ranged in 1899 from 200 to 415 to the square mile. The most thickly settled department is thus only slightly over twice as densely settled as the most sparsely settled department. Comparison with former years indicates that this evenness is increasing. The population is denser in the west than in the east, denser in the north than in the south, and denser on the coast than in the interior. The climate probably accounts for this, the southeastern coast being known as the arid coast. The most sparsely settled of the entire 69 municipal districts of the island has a population of 58 to the square mile, about the same as Indiana.

ELEMENTS OF THE POPULATION.

The original Indian population was conquered and practically exterminated by the invading Spaniards, but there is evidence of considerable Indian admixture, traces of the Carib physiognomy

being even now perceptible. Beginning with the early part of the sixteenth century, large numbers of negroes were introduced. As a consequence, the present population of Porto Rico is made up, to a considerable extent, of a mixture of the three elements—white, Indian, and negro.

Of the 953,243 inhabitants, 61.8 per cent were returned by the census of 1899 as whites and 38.2 per cent as colored. The latter, with the exception of 75 Chinese, were negroes, either pure or of various degrees of admixture. The proportion of white persons in Porto Rico is thus apparently greater than in any other of the West Indies except Cuba. While the percentage of whites was 66.9 in Cuba (1899) and 61.8 in Porto Rico, it was only 38.4 in Bermuda, 25 in the Bahamas, 8.6 in Barbados, 6 on St. Vincent, 4 on the Leeward Islands, and 2.3 on Jamaica. It was even higher than in Florida (56.3), Alabama (54.7), Georgia (53.3), Louisiana (52.8), Mississippi (41.3), or South Carolina (41.6).

The percentage of the white population of Porto Rico appears to be increasing. Until 1820, when the colored element was 55.6 per cent of the population, the negroes gained more rapidly than the whites, but since then there has been a steady and almost continuous decline, until in 1899 the percentage of colored was only 38.2. Of this, it is claimed that 83.6 per cent are of mixed blood, which would leave only about 6.3 per cent of the entire population of pure negro blood.

The proportion of whites is largest in the western departments of the island and decreases toward the east, and is somewhat greater in the northern than in the southern districts. It is also larger in the interior than on the coast. In 40 municipal districts touching on the seacoast, the percentage of whites is 58.8, while in 29 interior districts, largely in the higher and cooler parts of the island, it is 66.3. The negroes are more largely employed in the culture of sugar, and the whites more largely in the culture of coffee. The colored population tends also to mass itself in the cities.

LABOR CONDITIONS—CURE FOR ANEMIA.

The great density of population in Porto Rico, compared with the scarcity of population in the neighboring countries which are its natural competitors, shows at a glance that the island has a decided superiority over all (except the small islands above mentioned) in the most essential element of industrial prosperity—an abundant labor element. In Cuba, Mexico, and Central America labor is at all times scarce and unreliable, so much so that for the banana plantations in certain parts of Central America laborers have to be imported from Jamaica. Porto Rico has at present all the labor that its industries can accommodate, and there is every reason to think that this labor will shortly show a decided increase in efficiency.

In the past the Porto Rican laborer has had the reputation of listlessness and a lack of ingenuity and resourcefulness. It is frequently alleged by large planters that they do not pay their men higher wages, because if they did the men would work fewer days. It is claimed that the men who earn 50 cents a day for six days would not work over four days if the rate were raised to 75 cents. This view of Porto Rican labor is looked upon by recent and unprejudiced observers as not justified.

Mr. John C. Gifford, in his report on the Luquillo Forest Reserve, says:

The natives are bright, hospitable, and willing to work. They are skillful in making articles of daily use from materials at hand, and are a much more hopeful class than the natives of the cities. Although the peons are often condemned as lazy and good for nothing by energetic and impatient settlers from abroad, they will work from early in the morning until dark for 40 cents, and will subsist on a small ration of rice, beans, and codfish. Given plenty of work, enough to eat, and rural schools for their instruction, these people will soon develop into fairly good citizens. My guide in these hills could walk all day, wielding a machete to cut his way, and at the same time carry a weight of 50 pounds through the rain and the hot sun. His great ambition was to own a gold mine and to have his children educated. These natives are almost invariably polite and generous.

It is now known that the "laziness" of which the Porto Rican population was accused is mostly due to conditions of health. Ninety per cent of the laborers were until recently infected with a parasite called "*Uncinaria americana*," the most prominent effect of which is a profound anæmia, leading to a general depression and inability to bear exertion. This discovery was made by Dr. Bailey K. Ashford, assistant surgeon, United States Army, while he was post surgeon in Ponce, shortly after the hurricane in 1899. As the disease had previously been studied in Europe, the means for its prevention and cure were well known, and were applied in Porto Rico with such signal success that practically all the cases treated were cured. The parasite lives in the intestine of its victim, but its eggs do not hatch within the human body but pass out with the feces and develop into larvæ on the ground. In this state, being so minute as to be almost invisible, they gain entrance into the human body, generally through the bare feet of the peasants, and burrow through muscle and other tissues till they reach the intestine, where they develop into worms. The cure, therefore, consists in the expulsion of the worms by means of thymol, male fern, or beta-naphthol. The preventive measures are the wearing of shoes and the use of latrines, in which the larvæ quickly die.

The success attained by Doctor Ashford led to the appropriation of \$5,000 by the insular legislature in 1904 for an "Anemia commission" to combat this disease. In five months (March 6 to August 15), with headquarters first at Bayamon, next at Utuado, that commission treated 4,543 cases of uncinariasis, practically all of whom were cured. The commission had ample opportunity to disprove the alleged laziness of the Porto Rican laborer, for they frequently found men working in the fields who in other countries would have been considered unable to perform labor. In the following year (1905) the appropriation was raised to \$15,000, and some 15,000 patients were treated, headquarters being this time established at Aibonito. In 1906 the appropriation was increased to \$50,000 and some 80,000 patients were treated. The work is now in charge of Dr. Gutierrez Igaravidez, with headquarters at Aibonito and nine substations in different parts of the island. The legislature is disposed to be generous to this work, for it means nothing less than the physical regeneration of a million people. It is confidently expected that the disease will be eradicated within a comparatively short time, and will thereafter cause no further expenditure, as a fair degree of vigilance will suffice to prevent its reintroduction. The importance of Doctor Ashford's discovery of the cause of this disease, therefore, can hardly be exaggerated.

Aside from the disease just described, Porto Rico is singularly salubrious, especially in the highlands. As Mr. van Leenhoff remarks, those parts of the Tropics where coffee grows best are the ones especially agreeable to the North American or European. "This condition," he says, "prevails in a high degree in the mountain districts of Porto Rico. No finer climate can be found in the world." A constant supply of fresh air from the ocean is afforded by the trade winds, which sweep over the island summer and winter. There has not been a case of yellow fever since the American occupation, although no special efforts were made to combat this disease, as in other countries. Other diseases, such as small-pox, typhoid, and malaria are very rare. In the highlands, at least, white men can work in the fields with the same degree of comfort as in the vicinity of Washington.

IMMIGRATION.

Hitherto the population of the island has been almost unaffected by immigration. The large increase from 155,426 in 1800 to nearly a million in 1899 has been due almost exclusively to the natural increase of the natives. In 1899 the number of foreign born was only 13,872, or about 1.5 per cent of the total. There are few regions in the Western Hemisphere in which the proportion of natives is so high and that of foreign born so low. In Cuba the proportion of foreign born is about seven times as great as in Porto Rico. Of the total number of foreign born, 11,422 were white, constituting 1.9 per cent of all the whites, and 2,450 were colored, or 0.6 per

cent of all the colored. The three cities of San Juan, Ponce, and Mayaguez contained 5,935 foreign born, or 43 per cent of the total foreign born, illustrating the tendency of foreigners toward the cities. Spanish-born were 7,690, or 55 per cent of the total foreign born. Spanish America contributed 1,542, of which 1,194 came from the West India islands. The United States contributed 1,069. From Africa were reported 427, of whom 258 were colored. This is probably the last remnant of the imported slaves. China was represented by but 68 persons.

The Spanish-born element largely dominates the internal commerce, both wholesale and retail. The Americans are mostly employed as engineers, foremen of factories, clerks, Government functionaries, and teachers.

DISTRIBUTION BY OCCUPATION.

The Porto Rican population is preponderatingly agricultural. While in the United States only 38 per cent of the entire number of breadwinners are engaged in agriculture, fishing, and mining, and in Cuba 48.1 per cent, in Porto Rico the percentage was 62.8. As the number of persons employed in fishing (455) and mining (48) was very small, while in the United States it is large, the disproportion becomes still greater. The following table shows the distribution by large groups of industries of the breadwinners in Porto Rico and Cuba in 1899 and in the United States in 1900:

PER CENT OF PERSONS ENGAGED IN SPECIFIED CLASSES OF OCCUPATIONS IN PORTO RICO, CUBA, AND THE UNITED STATES.

[From the Census of Porto Rico, 1899.]

CLASS OF OCCUPATION.	Porto Rico.		Cuba.	United States.
	Number.	Per cent.		
Agriculture, fisheries, and mining.....	198,761	62.8	48.1	39.7
Domestic and personal service.....	64,819	20.5	22.8	19.4
Manufacturing and mechanical industries.....	26,515	8.4	14.9	22.2
Trade and transportation.....	24,076	7.6	12.8	14.6
Professional service.....	2,194	.7	1.4	4.1
Total.....	316,365	100.0	100.0	100.0

The great majority of the breadwinners in Porto Rico belong to the unskilled classes. Of every 1,000 breadwinners 682 were classed as laborers and 82 were classed as servants. In other words, 76.4 per cent, or over three-fourths, of all the men, women, boys, and girls employed on the island were laborers or servants. The proportion of males is still greater, 78.8 per cent of all males employed, or almost four-fifths, being reported as laborers.

The following table shows the percentage of breadwinners of both sexes in Porto Rico in 9 specified occupations, including 92 per cent of all breadwinners:

PER CENT OF ALL BREADWINNERS IN PORTO RICO ENGAGED IN SPECIFIED OCCUPATIONS.

[From the Census of Porto Rico, 1899.]

OCCUPATION.	Per cent of all breadwinners.	OCCUPATION.	Per cent of all breadwinners.
Laborers.....	68.2	Carpenters.....	1.6
Servants.....	8.2	Salesmen and saleswomen..	1.5
Launderers.....	5.4	Agents.....	1.3
Merchants.....	2.8	Operatives in cigar factories.	1.2
Dressmakers and seamstresses.....	1.8	Total.....	92.0

The laboring population of Porto Rico is extremely homogeneous. The census of 1899 divided all breadwinners into 82 special classes of occupations, but 68.2 per cent are employed in the single category of unclassified laborers and 92 per cent in 9 classes. The other 73 classes thus included only 8 per cent of all workers.

The population is overwhelmingly rural. There is no large city on the island, and but four cities with a population of 8,000 or over. These are San Juan, 32,048; Ponce (including port), 27,952; Mayaguez, 15,187, and Arecibo, 8,008. The total urban population in cities of 8,000 or over was only 8.7 per cent of the total, as compared with 32.3 per cent in Cuba and 33.1 per cent for the United States (1900). There were, however, in 1899 in Porto Rico 53 small towns with a population of 1,000 or more but less than 8,000. These small towns, together with the cities of 8,000 or over, had a population in 1899 of 203,792, or 21.4 per cent of the total. In Cuba the corresponding percentage is 47.1.

WAGES AND STANDARD OF LIVING.

Wages in Porto Rico are very low. In the sugar plantations the average rate for ordinary unskilled work is from 50 to 55 cents a day. In the coffee plantations it is 30 cents a day, though in the picking season, when wages are paid by measure, the rate is somewhat higher. In the tobacco fields the wages average slightly over 40 cents a day. These wages are practically those of the average workingman, for the proportion of nonagricultural laborers, as has been noted, is very small. In the cities, notably San Juan, wages, especially for skilled labor, are somewhat higher, but the number of workmen enjoying this advantage is small compared to the total.

It is these low wages that enable Porto Rico to compete with other countries in certain industries, especially cigar making, despite the lower standard of efficiency of the Porto Rican laborer. However, in other industries even this factor has proved insufficient. Many small industries which flourished formerly, such as tile making, furniture making, hat making, etc., have been nearly or quite extinguished by the importation of machine-made products of other countries. This process was going on even before the American occupation, but has since been accelerated.

With wages so low, savings are practically out of the question, except in a few favored industries. The workman needs his entire wage for the support of himself and his family. Intemperance is almost unknown in the island, but the vice of gambling is widespread.

How a family can live on the low wages above mentioned can be better understood when the life conditions of the island are considered. No fuel is needed for heating, and the amount needed for cooking is so small that it can always be had for the slight labor of gathering. The house is a mere framework of poles covered with bark and roofed with palm leaves or grass, with or without floor. The clothing of the farm laborer consists for the most part merely of a cotton shirt and a pair of cotton-duck trousers. Shoes are very unusual; socks even more so. Thus almost the entire earnings of the laborer go to provide food for himself and family. This food consists chiefly of rice, bananas or plantains, codfish, to some extent corn, to a slight extent milk, and a few native vegetables and fruits. Meat is seldom eaten.

PUBLIC HEALTH AND SANITATION.

The sanitary condition of the cities, especially San Juan, has been improved since the American occupation, but much remains to be done. At San Juan, in the poorer quarters, the population is overcrowded—four, five, or six persons often living in one room. Many of the rooms are damp and very dark, with no windows, and no ventilation except through the open door.

One very important problem is that of water supply. At the time of the American occupation most of the country people drank the water from the rivers, which were used not only as public laundries but as common sewers for the surrounding country. Fifty-four per cent of all the dwellings secured their drinking water in this way. Thirty-five per cent of the dwellings secured their water from cisterns, which collected the rainwater from the roofs of houses, including all the filth encountered on the way. Only the cities of San Juan, Mayaguez, and Ponce had waterworks, and these supplied only 6 per cent of the dwellings.

The superior board of public health is making strenuous efforts to combat these conditions, especially by introducing adequate sewerage in the larger cities. In 1905 the death rate was reduced from 24.04 to 22.2, a decrease of 1.84 per thousand. As regards the sanitation of San Juan, much is expected from the proposed dredging operations in the harbor, which, by filling in large tracts of useless marsh, will create considerable space for the expansion of the city, now hemmed in on a narrow neck of land. It is thought that the value of this reclaimed land for building purposes will more than pay the cost of dredging.

EDUCATION.

"Education and roads" has been the watchword of the American administration of Porto Rico since the island became an American possession. It was understood from the beginning that, in order to develop the natural resources of the island and to enable the people to occupy a dignified position in the great structure of our Republic, they must first be taught to help themselves.

The census of 1899 revealed the unsatisfactory condition of public education. Although a large number of the upper class were highly educated, and although a system of nominally free schools had been established for the masses, the island was practically without educational facilities. The government did not build schoolhouses, but, having appointed a teacher, allowed him a certain sum with which he was authorized to hire a house which should serve both for his own dwelling and for the school. He was supposed to receive a salary from public funds, but it was usually in arrears, and, to augment his income, he was allowed to collect tuition from those pupils who could afford it. The theory was that the poor should receive freely what the well-to-do must pay for, but the result was that the nonpaying pupils were not warmly welcomed and those that came to school received very little attention. The greater number of them were occupied in cutting grass or carrying water or other tasks for the benefit of the teacher. According to the records, nearly 500 such schools were in existence when Spanish sovereignty ended, and the enrollment of pupils was approximately 25,000. It is probable that but a comparatively small proportion of this number were in regular attendance, nor was the official course of study such that those who did attend could receive great profit. The text-books were little manuals of questions and answers, which were to be learned verbatim. That scholar was considered most proficient who was able to repeat the largest number of questions with their answers without varying from the text-book.

The general administration of the schools was in the hands of the provincial authorities, and just prior to the change of sovereignty the administration was conducted by a bureau of the department of the interior. The expenses of the administration were provided by the provincial budget, but the principal expenses—the lighting of the buildings, the remuneration of the teachers, and the cost of school supplies—were met by the impoverished municipalities. Space, light, ventilation, and school appliances were inadequate.

The results of this system, as ascertained by the census, are set forth in the following table:

SCHOOL ATTENDANCE, LITERACY, AND SUPERIOR EDUCATION IN PORTO RICO IN 1899.

DEPARTMENT.	Total population.	Under 10 years of age.		Ten years of age and over.	
		Attended school.	Did not attend school.	Attended school.	Can neither read nor write.
Aguadilla.....	99,645	878	30,460	1,231	56,853
Arecibo.....	162,308	1,257	50,219	2,111	92,036
Bayamon.....	160,046	2,312	46,821	2,895	78,759
Guayama.....	111,986	1,258	34,978	1,992	60,253
Humacao.....	88,501	948	27,014	1,455	48,965
Mayaguez.....	127,566	1,629	34,885	2,675	65,121
Ponce.....	203,191	2,181	59,109	3,390	107,511
Total.....	953,243	10,463	283,486	15,749	509,498

SCHOOL ATTENDANCE, LITERACY, AND SUPERIOR EDUCATION IN PORTO RICO IN 1899—Continued.

DEPARTMENT.	Ten years of age and over—Continued.			Superior education.	
	Can read but can not write.	Can read and write.	Not stated.	Yes.	No.
Aguadilla.....	1,161	9,007	55	134	99,511
Arecibo.....	1,947	14,715	23	348	161,960
Bayamon.....	3,786	24,747	726	1,375	158,671
Guayama.....	1,331	12,149	25	350	111,636
Humacao.....	1,085	8,734	300	400	88,101
Mayaguez.....	2,562	20,628	66	1,531	126,035
Ponce.....	3,508	27,280	212	907	202,284
Total.....	15,380	117,260	1,407	5,045	948,198

The existing schools afforded accommodation only for one child in seven of the school population. The proportion of the total local and general revenues of the island devoted to education was but little over one-fourth of the corresponding proportion in the United States. The cost per capita of pupils enrolled was greater than the cost of the public schools in Maine, Missouri, or West Virginia, and more than twice that in many of the Southern States of the Union. The real work of reorganization began with the enactment of a comprehensive school law by the legislature on January 31, 1901.

FIVE YEARS OF PROGRESS.

The progress of education in recent fiscal years is reflected in the following figures:

NUMBER OF SCHOOLS IN PORTO RICO, AND AVERAGE DAILY ATTENDANCE OF PUPILS, FISCAL YEARS 1902 TO 1906.

	1902	1903	1904	1905	1906
Number of schools.....	871	1,007	1,063	1,048	1,074
Average daily attendance.....	29,552	32,164	37,473	40,345	41,802

The reorganization was facilitated by the "trust fund," of about \$2,400,000, consisting of moneys collected as duties on Porto Rican imports into the United States before the removal of the tariff on merchandise from that island entering the United States. This trust fund was devoted to the building of roads and of schoolhouses, and to its existence the rapid increase in the number of schools from 1901 to 1904 is largely due. The fund is now nearly exhausted, and unless a substitute therefor is found the progress of education in the island is bound to meet with a serious check.

The public schools of the island are administered by the department of education, in charge of the commissioner of education, who is an ex officio member of the executive council. The school system comprises rural, graded, agricultural, industrial, high, and night schools.

The simplest type is the rural school, which provides for about half of the pupils regularly attending the schools. In them the teacher gathers about him the children of the neighborhood, groups them as well as possible according to their attainments, and instructs them in not more than three groups in the elements of reading, writing, and arithmetic. The course of study prescribed for these schools covers the instruction generally given in towns in the first three years of school work.

The graded schools are located in the towns and cities. In them the instruction is based on an eight-year course, and when it is completed the student is ready for the high schools. In some of them the instruction is given wholly in the English language, either by American or by Porto Rican teachers. A considerable number of the latter have already qualified to teach in English.

The rural and graded schools, both known under the name of "common schools," are under the joint administration of the department of education and the local school boards elected in the various

municipalities of the island. The latter provide schoolrooms and equipment, keep them in order, and nominate teachers, to whom they pay a small monthly allowance in lieu of house rent. Salaries of teachers are paid by the insular government. The department of education determines the number and character of schools to be opened in each department, and through its corps of district superintendents, of whom there are 19, exercises a close supervision over the educational work of the schools.

The agricultural schools are provided with 2 or 3 acres of ground in which the children work under the direction of the teacher for two hours daily, the classroom work being curtailed to some extent. The difficulty has been to find persons competent to fill the position of teacher and agriculturist at the same time. The most successful of these schools have been those of Sabana Grande, Lajas, and Cabo Rojo, where rural teachers have charge of the ordinary instruction and an agricultural teacher passes from school to school, devoting all his time to the teaching of agriculture.

Five industrial schools have been in operation—in San Juan, Ponce, Mayaguez, Arecibo, and Guayama. Besides affording elementary instruction, they teach handicraft, such as woodworking, forging, and leather work, to the boys; and domestic work—cooking, sewing, and embroidery—to the girls. Courses in drawing, in large part contributory to the industrial work, have been very effective in these schools. Courses in typewriting and stenography have been very popular. In the school at San Juan a considerable number of boys have learned the printer's trade. The legislature having failed to make appropriations for the industrial schools at Arecibo and Guayama, these had to be closed.

High schools have been established at San Juan, Ponce, and Mayaguez. Many American colleges admit pupils from Porto Rican high schools without examination. San Juan graduates are represented at Cornell, Princeton, Dickinson, and Rutgers, while Ponce graduates have entered Cornell, Syracuse, and Pennsylvania. The department of education of the State of New York has recently placed the San Juan and Ponce high schools upon its list of approved schools, which entitles the graduates of such schools to enter without examination any college or university in the State of New York.

In the fiscal year 1906 all the high schools added two-year commercial courses. These have proved very popular, absorbing a large proportion of the entering classes and probably contributing to the fact that the entering classes were somewhat larger than before.

LACK OF TEACHERS.

One of the most pressing needs in Porto Rico is that for well-trained teachers. To supply this need, there was established a normal school at Rio Piedras, 7 miles southeast of San Juan. In March, 1903, the government of the normal school was withdrawn from the department of education and transferred to the board of trustees of the University of Porto Rico. This school receives as students graduates from the eighth grade of the public schools of Porto Rico and offers them a two-year and a four-year course in normal training. The subjects taught in the common schools are reviewed and presented from the teacher's standpoint, advanced studies are undertaken, and opportunity for practice teaching under supervision and criticism is given in the graded school connected with the institution. At the end of two years pupils receive an elementary certificate, which entitles them to teach in the graded schools of Porto Rico, if they are of the requisite age. If under age, they receive a rural license, changed for a graded license as soon as the legal age is obtained. Pupils taking the four-year course obtain a diploma which entitles them, after one year's teaching and on attaining the legal age, to receive a principal's license. The insular government provides 28 scholarships in the normal school, allotted to different parts of the island. The graded school which serves as a practice school to the students of the normal school also furnishes the best kind of instruction to the children of Rio Piedras. There are numerous instances of families moving to Rio Piedras in order to educate their children in this school.

The pressing need of the moment is to secure an adequate supply of rural teachers. The number of rural schools actually opened has diminished in recent years because rural teachers, having passed the examinations to qualify them as graded teachers, have gone to the towns, and none have been found to take their places. The last legislature voted an increase of salary to the rural teachers, which, it is hoped, will change this condition. At best, however, the salaries of Porto Rican teachers are not such as to attract American teachers who have not some other inducement for going to Porto Rico. Such inducements are the natural charm of the island and the opportunity to work in a place where results are so readily seen and appreciated; the novelty of life in a tropical country, and the facilities for acquiring a knowledge of the Spanish language.

The use of English as the medium of instruction is rapidly spreading, not through any effort on the part of the school authorities but in response to a demand by the people themselves, who perceive in the English language a means toward success in business. While in the fiscal year 1905 only 44 schools were conducted in English, the number in the fiscal year 1906 was 113. In December, 1905, the use of the English language in the grades was ascertained to be as follows:

Grades taught wholly in English by American teachers.....	33
Grades taught partially in English by American teachers.....	34
Grades taught wholly in English by Porto Rican teachers.....	36
Grades taught partially in English by Porto Rican teachers.....	51
Total.....	154

UNIVERSITY, PRIVATE, AND NIGHT SCHOOLS.

The University of Porto Rico was established in response to a demand for professional schools. There is an immediate and urgent need for a medical school, a law school, an engineering school, and of a university hospital, which would become an insular central hospital with large supervisory powers over the whole medical work of the island. In former days young men sought this education in Spain; now they go to the United States. Distance and other factors, however, prevent many from so doing, so that professional education in the island will be insufficient until Porto Rico has its own professional schools. As the resources at the disposal of the government are insufficient to meet the urgent demand for primary instruction, it was thought that the need for professional schools might best be supplied from private beneficence, both in Porto Rico and in the United States.

The board of trustees of the university have organized their agricultural department in conformity with the condition which Congress has imposed on State colleges of agriculture and mechanic arts, in the hope that the Morrill and Hatch acts for Federal aid to State agricultural education may be extended to Porto Rico, which would mean a contribution of \$30,000 or \$40,000 a year from the Federal treasury to the resources of the University of Porto Rico. The trustees have acquired additional land, so that the university now owns 150 acres only 7 miles from San Juan, accessible by trolley, steam railway, and macadam road. The general plan of the agricultural school is built largely on the experience at Tuskegee and similar institutions in the United States. The students spend the morning at work in the fields learning practical farming and at the same time cultivate the university farm. The afternoon is spent in the schoolroom in the studies of the common schools and of elementary agriculture. The students are boarded at the university.

In the principal towns of the island there are one or more night schools, in which are taught reading, writing, and elementary arithmetic. These schools are intrusted to the care of teachers in the day schools, who receive extra compensation. In very few cases night schools have been established in the rural regions. Adults are excluded from night schools unless the number of children is insufficient. As these schools can be conducted at comparatively small expense, the policy has been to favor their multiplication. In the fiscal year 1905 their number was 37; in the fiscal year 1906 it was 80. Their great drawback is that pupils pass in and out so rapidly that systematic instruction is difficult.

Apart from the system of public schools, there are a number of private schools, mostly conducted by the Catholic Church. The American Sisters of Charity have opened a school in Mayaguez, now attended by 700 children, and 1,000 are expected as soon as sufficient accommodations are provided. At San Juan there is a kindergarten and a school for improved instruction of deaf-mutes, called "St. Michael's School," under the control of the Bishop of San Juan, who also controls St. Gabriel's School, at Aguadilla, for deaf-mutes. The Sisters of Charity, under the protection of the bishop, conduct 2 schools at San Juan, 2 in Ponce, 3 in Mayaguez, and 1 each in Yauco, Bayamon, Santurce, Coamo, and Arecibo. The Christian Brothers of the New York Province have charge of St. Paul's College, San Juan.

The status of the entire educational system of the island on March 2, 1906, is exhibited in the following table:

NUMBER OF SCHOOLS IN PORTO RICO AND PUPILS ENROLLED,
MARCH 2, 1906.

TYPE OF SCHOOL.	Number of schools.	Pupils enrolled.
Common:		
Graded.....	518	23,412
Rural.....	498	25,347
Total.....	1,016	48,759
Agricultural rural.....	12	611
School of practical agriculture (university).....	1	23
Industrial.....	3	521
High.....	3	124
Normal.....	1	115
Total public day schools.....	1,036	50,153
Night schools.....	73	2,338
Total public schools.....	1,109	52,491
Private schools.....	167	4,316
Total schools.....	1,276	56,807

PRESENT CONDITIONS AND NEEDS.

Gratifying as is the progress made in the 8 years of American control, the school system yet falls far short of supplying the educational needs of the island. Leaving aside the higher education as a problem by itself, it is generally assumed that an ideal system of common school education would provide that every child between 8 and 16 years shall be at school. That ideal remains indeed unattained even in the wealthiest and most civilized countries, though some of these fall but little short of it. What are the facts in this respect in Porto Rico?

According to estimates by the census authorities, the number of children between 8 and 16 years in Porto Rico is 210,965, a little more than one-fifth of the total population. Out of this number, 56,807, as we have seen, were enrolled as pupils in the fiscal year 1906. This means that three out of four children who ought to have been at school were not. It does not mean, however, that with the present facilities, three out of every four children remain wholly untaught. Many leave and will continue to leave school long before the age of 16, after mastering at least the rudiments of reading, writing, and arithmetic. Assuming an average course of four years' schooling as the minimum that ought to be provided, it is found that the aggregate of towns, with a total of 26,266 children between the ages of 8 and 11, have facilities for 80 per cent of these children; that one group of rural districts, with 47,988 children from 8 to 11 years of age, has school facilities for 50 per cent of these children; that the remaining rural districts, numbering 19,104 children between 8 and 11 years of age, have no schools at all.

Evidently, even on the modest assumption of a four years' course, the present facilities are hardly one-third of what they ought to be. The insular revenue is not increasing fast enough to justify any very sanguine expectations of increased school funds from that source. Now that the "trust fund" has been practically exhausted, the ex-

pansion is likely to be less rapid than during recent years. In other words, the present prospect is that during the next decade two out of every three children in Porto Rico will grow up with but little schooling.

LIBRARIES.

The Insular Library of Porto Rico was established by an act of the legislative assembly of Porto Rico, approved March 12, 1903, for the purpose of furnishing a depository for public documents, archives, and records of the legislative assembly and departments of the insular government, where they could be consulted by members of the assembly and heads of the departments. It was formerly the Free Library of San Juan and is located pleasantly in three large, well-lighted rooms in the building known as "La Diputacion Provincial," in the heart of San Juan, and is very accessible to those desiring to avail themselves of its conveniences. It is patronized mostly by Porto Ricans, attracted by a good assortment of modern Spanish literature and by the many Spanish magazines and periodicals to which the library subscribes. The reading tables are always well filled, but more especially in the evening. The more serious class of reading is represented by many books of biography, history, and travel, a legacy of the old Spanish libraries existing in San Juan before the American occupation.

The library has an appropriation of \$3,400 for the payment of the salaries of a librarian and assistant librarian and for subscriptions and purchases. It is conducted under the direction of a board of trustees, of which the commissioner of education, the commissioner of the interior, and the secretary of Porto Rico are ex officio members.

Besides the Insular Library, San Juan has two others, the Municipal Library, maintained by the municipal government, and the Library of the Atheneum, maintained by the members of that learned association. There are also libraries at Ponce, Mayaguez, Cabo Rojo, and Utuado.

NEWSPAPERS AND PERIODICALS.

Periodicals published in Porto Rico, in Spanish unless otherwise stated, are the following:

San Juan: La Democracia, La Correspondencia, El Boletín Mercantil (Spanish and English), El Heraldo Español, La Revista de Puerto Rico (Porto Rico Review; Spanish and English), El Estudiante (The Student; Spanish and English), El Ideal Católico. Ponce: El Aguila (The Eagle; Spanish and English). Mayaguez: La Voz de la Patria, La Bandera Americana. Aguadilla: El Criollo. Some half a dozen smaller periodicals are published in other towns of the island.

CITIES AND TOWNS.

SAN JUAN.

San Juan, the capital of Porto Rico, was the residence of the Spanish governor-general, and was made the seat of government under the American administration by the organic act of April 12, 1900. It owes its existence to the harbor, the best on the island, although far from equal to modern demands. The harbor consists of a somewhat elongated lagoon which extends southeastward, with a constriction about its middle, due to the projection of Cataño headland, on the west side. On the north the harbor is separated from the ocean by an island 2.72 miles long and from a quarter to half a mile in width. The eastern end of this island is separated from the mainland by San Antonio Channel, over which San Antonio bridge establishes communication between the island and the mainland. Near the western end a spur of land runs from the body of the island southward, increasing the width of the island to about three-fourths of a mile, and terminating in a projection called Puntilla Point. The town of San Juan is situated on the expanded western end of the island, at the base of the spur just mentioned. Toward the ocean the island presents a precipitous front about 100

feet high, and at the west end of this high ground, overlooking the entrance into the harbor, is Morro Castle, the ancient Spanish fort which defended the city and harbor. Other lines of fortifications skirt the ocean front of the island for three-fourths of a mile eastward. These fortifications served their purpose very well, resisting many desperate attempts to capture the city during the seventeenth and eighteenth centuries.

San Juan is a perfect specimen of a walled town, with portcullis, moat, gates, and battlements. Built over two hundred and fifty years ago, it is still in good condition and repair. The walls are picturesque and represent a stupendous work and cost in themselves. Inside the walls the city is laid off in regular squares, six parallel streets running in the direction of the length of the island and seven at right angles. The houses are closely and compactly built, of brick, usually of two stories, stuccoed on the outside, and painted in a variety of colors. The population within the walls is about 20,000; the total population of city and suburbs 35,000.

The streets are wider than in the older part of Habana and will admit two carriages abreast. The sidewalks are narrow and in places will accommodate but one person. The pavements are of a composition manufactured in England from slag, pleasant and even, and durable when no heavy strain is brought to bear on them, but easily broken and unfit for heavy traffic. The streets are swept once a day by hand and kept very clean. The soil under the city is clay mixed with lime, so hard as to be almost like rock. It is consequently impervious to water and furnishes a good natural drainage. The trade wind blows strong and fresh, and through the harbor runs a stream of sea water at a speed of not less than 3 miles an hour. With these conditions no contagious disease, if properly taken care of, can long exist.

The greatest drawback, in Spanish time, was the lack of an adequate water supply. There was an aqueduct, but it was not in repair, and few houses were connected with it. There was no sanitary plumbing and no sanitary sewers, practically all the water being obtained from cisterns. Under American rule the "aqueducto" has been enlarged and modernized, all cisterns abolished, and all houses connected with the city water supply. The pressure is ample for domestic, fire, and sanitary purposes. The supply comes from the Rio Piedras, about 6 miles above San Juan, where it is diverted into a short canal which carries it into settling reservoirs, each of which has a capacity of one-and-a-half days' supply, at the rate of 35 gallons per head. Thence the water flows into filter beds, whence it is pumped to a distributing reservoir 110 feet high. From this it is carried by underground mains into the city.

Besides the town within the walls, there are two portions just outside called La Marina and Puerta de Tierra, containing 2,000 or 3,000 inhabitants each. La Marina is situated just north of the naval station at Puntilla Point, while Puerta de Tierra is situated on the narrow part of the island east of the main town. There are also two suburbs—one, Santurce, approached by the only road leading out of the city, namely, the military road to Ponce, the other, Cataño, across the bay, reached by ferry.

Aside from tobacco manufacturing, which is of recent development, there is but little manufacturing in the city. An American company has a small oil refinery across the bay, in which crude petroleum, brought from the United States, is refined. Matches are made, some brooms, a little soap, and a cheap class of trunks. There are also ice, gas, and electric-light works.

PONCE.

The city of Ponce is situated on the south coast of the island on a plain, about 2 miles from the seaboard. It is regularly built, the central part almost exclusively of brick houses, the suburbs of wood. It has a fine church in the Plaza de los Delicios, two hospitals (one called Tricoche Hospital after its founder), a home of refuge for the old and poor, a perfectly equipped fire department, a bank, a chamber of commerce, a theater, several first-class hotels,

an ice factory, and gas works. The inhabitants, who number about 25,000, are principally occupied in mercantile pursuits; but carpenters, bricklayers, joiners, tailors, shoemakers, and barbers find good employment. Commercially, the city of Ponce is the second city on the island. A fine road leads to Ponce Playa, the seaport, where all the import and export trade is transacted. Ponce Playa has about 5,000 inhabitants, and here are situated the custom-house, the office of the captain of the port, and all the consular offices. The port is spacious, though poorly protected, and will hold vessels of 25 feet draft. Loading and unloading is effected by means of lighters. Water for all purposes, including the fire department, is supplied by an aqueduct, derived from the Rio Portugues, about 9 miles above the city, and conducted in masonry conduits and underground iron distributaries into the city.

MAYAGUEZ.

Mayaguez, the third city of importance on the island, is situated on the west coast, close to the seashore, but not on it, having its Mayaguez Playa, or port, like so many Porto Rican towns. It is one of the most prosperous and progressive towns on the island. There are manufactories of chocolate, for local consumption, and a canning factory, principally for pineapples, which are raised in the vicinity in rapidly increasing quantity. Near the city is the Insular Agricultural Experiment Station. It has perhaps the best waterworks on the island, derived from the Rio Mayaguez. Its climate is pleasant and its reputation for salubrity excellent. The population, which in 1899 was 15,187, is now estimated at 20,000, the majority being white.

AGUADILLA.

This city is notable as being the spot near which Juan Ponce de Leon, the colonizer and first governor of Porto Rico, landed in 1508. Near by, at Aguada, is the spot where Columbus himself landed on the occasion of his only visit to the island on November 16, 1493, during his second voyage. The town is the outlet for the rich districts of Lares and San Sebastian, with which it is connected by a macadamized road.

ARECIBO.

This town, situated at the mouth of the Rio Grande de Arecibo, is connected with San Juan, Mayaguez, and Ponce by rail, and with Ponce also by the Arecibo-Ponce military road, directly across the island. Soon it will also have direct communication by rail with Lares. It is similar to all Spanish towns, having in the center a plaza, surrounded by public buildings and streets running from it at right angles, forming regular squares. The buildings are constructed of brick and wood. The harbor is poor, being nothing more than an open roadstead exposed to the full force of the ocean, in which vessels during northerly winds can hardly lie in safety. Close inshore, on one side, dangerous reefs stretch, a constant menace to vessels if the anchor does not hold. From the interior of the island goods are conveyed down the Rio Grande de Arecibo in flat-bottomed boats, with the aid of long poles. At the bar of the river the goods are transferred into lighters and from these to the ocean-going vessels.

FAJARDO.

This is the most important town in the northeastern part of the island, and is situated on Fajardo River, a small stream emptying near the northeast cape, called Cape San Juan, on which there is a light-house. The town of Fajardo itself is not situated on the seashore, but has its Fajardo Playa, or port, a fairly well protected harbor between Cape San Juan and Punta de Mata Redonda. It is now connected with Ceiba and Luquillo by good macadamized roads, and a railway line is being constructed between it and Mauneyes, which eventually will give it communication with Carolina and San Juan. The distance from the town to the harbor is about 1½ miles. The most important industry of the town is the manufacture of brown sugar.

OTHER TOWNS.

Naguabo is another town on the east side of the island, situated not on the seashore itself but 3 miles inland, its actual port being called Ucares or Naguabo Playa. It has a fair harbor and is connected by macadamized road with Humacao, the capital of the department, and with the general insular network of roads. The line of railway now building from Maneyes eastward is to be extended as far as Naguabo, and another line, building from Caguas to Humacao, will give Naguabo communication with the interior.

Arroyo is the port of Guayama, the principal city in the southeastern corner of the island, which lies 4 miles northwest of the port. It has a fairly safe harbor, with a light-house on the cape to the southeast of it.

The island of Vieques, or Crab Island, situated 13 miles east of the mainland of Porto Rico, is 21 miles long and 6 miles wide. Its land is very fertile and adapted to the cultivation of almost all the fruits and vegetables that grow in the West Indies. The main town, Isabel Segunda, is on the north, but its port is unsafe in times of northerly wind, like all the anchorages on that side. The few ports on the south side are better, the best being Punta Arenas.

VALUE OF PROPERTY IN MUNICIPALITIES.

The following table shows the value of movable and immovable property in the principal cities and towns of Porto Rico:

OFFICIAL ASSESSED VALUATION OF MOVABLE AND IMMOVABLE PROPERTY IN CITIES AND TOWNS OF PORTO RICO, CORRECTED TO JANUARY 9, 1905.

[From report of the Porto Rico Chamber of Commerce.]

TOWN.	Valuation of property.	TOWN.	Valuation of property.
	<i>Dollars.</i>		<i>Dollars.</i>
Arecibo.....	3,165,244	Lajas.....	946,262
Aguada.....	691,000	Manati.....	1,674,010
Aguadilla.....	794,254	Morovis.....	422,810
Añasco.....	1,114,016	Mayaguez.....	4,640,664
Adjuntas.....	1,207,125	Maricao.....	1,061,680
Aibonito.....	499,050	Moca.....	396,424
Aguas Buenas.....	359,442	Matunabo.....	458,830
Arroyo.....	631,696	Naguabo.....	888,032
Bayamon.....	1,595,672	Naranjito.....	209,406
Barranquitas.....	282,806	Ponce.....	9,268,614
Barros.....	539,242	Peñuelas.....	601,456
Carolina.....	1,088,378	Patillas.....	601,400
Camuy.....	601,428	Quebradillas.....	251,374
Ciales.....	942,204	Rio Grande.....	963,406
Corozal.....	321,520	Rio Piedras.....	1,159,360
Cabo Rojo.....	1,209,144	Rincon.....	204,160
Coamo.....	1,239,934	San Juan.....	10,694,673
Caguas.....	1,137,930	San Sebastian.....	1,021,034
Cayey.....	927,152	Sabana Grande.....	465,792
Cidra.....	306,586	San German.....	1,437,804
Comerio.....	317,710	Salinas.....	1,899,444
Dorado.....	377,086	Santa Isabel.....	1,173,384
Fajardo.....	1,737,610	San Lorenzo.....	468,200
Guayanilla.....	917,618	Trujillo Alto.....	197,902
Guayama.....	2,402,866	Tor Alta.....	340,268
Gurabo.....	452,824	Tor Baja.....	645,156
Humacao.....	1,789,094	Utuado.....	2,276,036
Hatillo.....	603,996	Vieques.....	1,851,534
Isabela.....	516,792	Vega Alta.....	458,992
Juana Diaz.....	2,534,216	Vega Baja.....	740,208
Juncos.....	551,830	Yabucoa.....	940,292
Loiza.....	804,316	Yauco.....	3,317,662
Lares.....	1,469,724		
Las Marias.....	1,122,676	Total.....	85,928,450

AGRICULTURE.

Though Porto Rico has now a few manufactories, and a prospect of many more when its abundant water power shall be fully utilized, yet for a long time to come it will remain essentially an agricultural country. The proportion which agriculture bears to the other industries may be gathered from the fact that, out of 316,365 breadwinners enumerated in the census of 1899, 198,258, or 63 per cent, were engaged in agriculture.

The physical conditions in Porto Rico are such that but a small share of the surface is unsuitable for cultivation. At first sight its rugged mountainous character would seem to forbid cultivation

over a large part of the island. The fact is that some of the steepest slopes bear the best-paying crops. Hardly a traveler in Porto Rico but expresses his astonishment at the sight of farmers cultivating declivities so steep that the stranger deems it risky to climb them. "Cultivation of mountain tops" is one of the hackneyed pictures in works on Porto Rico.

With a remarkably uniform temperature ranging between 58° and 98° F., a rainfall varying from 50 to 140 inches over the larger part of the island, and amounting to not less than 20 inches even on the arid southern slope, distributed moreover with remarkable uniformity, so that there is rarely a week without rainfall, the climate presents ideal conditions for luxuriant vegetal growth.

SOILS.

The soils of Porto Rico have been described by Mr. Robert T. Hill (Bulletin No. 25, Department of Agriculture, Division of Forestry). The chief difference is between the red mountain soils and the calcareous foothill soils. The rocks are almost everywhere deeply covered with soil, the only exposures of hard rock being in the gorges of mountain torrents. Decay of rock is so rapid in this warm, humid climate that the original rock has become covered with soil to a depth of 50 or 100 feet. The mountain soils are the residuum of the black basic volcanic rocks, the red color being derived from the iron in these rocks, the clay from the feldspars. This red soil resembles in color and tenacity the red-clay regions of the southern Appalachians, but is derived from quite different rocks and is apparently much richer in phosphates and lime. The mountain soil is one of the most marked features of the island, and to it are largely due many of its agricultural and forest conditions. Were it less tenacious and sticky, the slopes would now be washed and dreary wastes of barren rock. Naturally rich in plant food, this soil is further improved by the vast amount of humus derived from the accumulated vegetal debris of past centuries.

The calcareous soils of the foothill region are of the open-textured white limestone type which abounds from Florida southward, but is not common in the United States. They are the residua of the chalky limestones and marls of the substructure, and are excessively calcareous, very much resembling the chalky lime soils of northern Mexico and the Rio Grande region of Texas. On the wet north side, where there is more moisture, the limestones are more decayed and the resultant soils are a red residual calcareous clay from which the excess of lime has largely been removed by solution, although lumps of undecomposed coral limestone remain. On the south the regolith, or decayed rock, is shallow and the soils are correspondingly thin. Furthermore, they contain an excessive proportion of lime. In places, notably near Guayanilla, these hill soils are less than a foot deep and are underlain by incrustations of the peculiar calcareous pan known in Mexico as "tepetate." These chemical and physical conditions, added to the comparative dryness of the southern slope, produce a more stunted tree growth than the red clays of the mountain region. The vegetation is dwarfed and consists of a great variety of species. The limestone hills are mostly grazing lands. The soils of the white limestone districts of the pepino hills in the northwest corner of the island—numerous sharp-pointed conical or flattened limestone hills, remnants of a dissected plateau, termed "pepinos" or cucumbers by the Porto Ricans—are in general of a marly character, whitish below and black on the surface. On the hilltops they are thin and unproductive, but where gathered into local valleys they are deep and rich, and are considered among the most productive on the island.

The alluvial lands along the coast and extending up some of the valleys are the product of the denudation of the uplands, consisting in most cases of an admixture of the two soils above described—the red, clayey, tenacious soil of the volcanic region and the light-colored, looser calcareous soil of the limestone region, making together a rich red loam. These extensive alluvial deposits combine essentially the qualities of the two residual soils, with the additional advantage of a more loamy physical structure adapted

for better drainage, root penetration, and cultivation. In the northwest portion of the island, where the alluvium is principally derived from the calcareous pepino hills, the soils are blacker and more calcareous. These alluvial soils constitute the sugar lands, and Porto Rico's sugar-producing capacity can be measured by their areal extent.

Much of the soil of Porto Rico is now abandoned and in the condition known throughout the English-speaking West Indies as "ruinate." This has resulted from long cultivation, from the failure to apply fertilizers, and, in some cases, from erosion. Land of this character is observed in many parts of the island. On the north coast in the vicinity of Rio Grande and Carolina are ruins of houses on what were once extensive sugar estates, the former fields being grown up in grass. The same is true of extensive tracts between Lares and Adjuntas and between Juana Diaz and Ponce. The reclamation of these lands by forestry or by soil-renovating crops, especially of the leguminous varieties, is one of the important problems of agriculture in Porto Rico.

A survey of Porto Rican soils was undertaken in 1902 by the Bureau of Soils of the United States Department of Agriculture, at the request of and in cooperation with the Porto Rico Agricultural Experiment Station, at Mayaguez, the results being published in Bulletin 3 of that station. The belt surveyed embraced 5 miles on each side of the military road from Arecibo to Ponce, and it is thought that the soils described represent practically all that are found in Porto Rico.

METHODS OF CULTIVATION.

At the time of the American occupation agricultural methods in the larger part of the island were rather primitive. In the main the only implements used were the hoe, the plow, and the machete. The hoe is a heavy thing with a handle about 6 feet long, with a blade as big as an ordinary plate. These were used for cutting weeds and chopping turf. Anything like a cultivator or similar implements was unknown. The plows were very heavy, usually drawn by four to six pairs of oxen. In many places wooden plows were used. Over a large part of the island the only implement was the machete, a short thick sword, made famous by the Cuban insurgents, which in time of peace serves mainly to cut the sugar cane, but is also used as a briar knife, ax, and hoe. With it the peon scratches holes in the surface of the ground in which to plant seeds or transplant sprouts. Thereafter no attention is given the plant until it is time to gather the crop.

The advent of American rule and the purchase of large tracts of land by American investors have wrought a complete change in these respects on many plantations and have largely affected the remainder. On some of the larger sugar plantations the most up-to-date methods are used, the steam plow and the electric trolley being largely employed.

LAND HOLDINGS.

Porto Rico is essentially the land of the small farmer. Limited as the island is in extent, the figures of the census of 1899 showed that it was then divided into 39,021 individual holdings. This number has doubtless somewhat diminished since then, many small holdings having been consolidated into large estates, especially in the areas devoted to sugar culture. The total cultivated area in 1899 was distributed as follows, by size of farms:

CULTIVATED AREA IN PORTO RICO IN 1899.

SIZE OF FARM.	Total area.	SIZE OF FARM.	Total area.
	<i>Acres.</i>		<i>Acres.</i>
0 to 4 acres.....	50,274	50 to 99 acres.....	64,942
5 to 9 acres.....	48,875	100 acres and over.....	171,392
10 to 19 acres.....	58,760		
20 to 49 acres.....	83,783	Total cultivated area.....	478,026

The areas cultivated in the various crops were as follows:

AREAS PLANTED IN VARIOUS CROPS IN PORTO RICO IN 1899.

CROP.	Area under cultivation.	CROP.	Area under cultivation.
	<i>Acres.</i>		<i>Acres.</i>
Tobacco.....	5,963	Cocoanuts.....	5,447
Sugar cane.....	72,146	Coffee.....	197,031
Rice.....	8,667	Indian corn.....	18,093
Sweet potatoes.....	37,109	Minor crops.....	49,836
Malangas.....	12,256		
Yams.....	2,098	Total cultivated area.....	478,026
Bananas.....	69,380		

The transformation effected even in the short time of three years in the relative importance of these crops is shown in the following table, giving the area devoted to the principal crops of Porto Rico in the fiscal year 1903, according to the bureau of information and statistics of Porto Rico:

AREAS PLANTED IN VARIOUS CROPS IN PORTO RICO IN THE FISCAL YEAR 1903.

CROP.	Area under cultivation.	CROP.	Area under cultivation.
	<i>Acres.</i>		<i>Acres.</i>
Sugar cane.....	112,416	Cocoanuts.....	2,931
Coffee.....	177,754	Salt deposits.....	2,701
Tobacco.....	18,414	Marsh and sand wastes, etc.....	8,555
Minor crops.....	201,036	Unclassified land.....	9,730
Pastures.....	806,934		
Uncultivated land.....	576,612	Total area of Porto Rico.....	1,991,086
Woodland.....	74,003		

A new census would doubtless show further changes in these figures. The area devoted to sugar cane would show a decided increase; the coffee area a decided decrease.

SUGAR AND COFFEE.

Sugar is now the main product of Porto Rico, having completely dislodged coffee from its place at the head of the list. Of the 19 million dollars' worth of merchandise sent from Porto Rico to the United States in the fiscal year 1906 (out of a total of 23½ millions' worth of exports), a little over 14 million dollars' worth was sugar.

The sugar lands, as stated elsewhere, are practically confined to the belt of alluvial level land encircling the island, widening at some points to some 10 miles, while on the whole it is only about 5 miles wide and at some points shrinks to nothing. Tapering prolongations of these alluvial lands extend inland along the water courses. In the present condition of boom in the sugar industry some higher lands have been occupied by cane fields, which in the long run will probably turn out to be better adapted to other crops, so that, while the production of sugar will doubtless increase for some time, owing to improvement in methods, the area devoted to sugar will probably undergo a slight diminution before long. At present it is larger than at any time in the history of the island.

The reason for the enormous increase in the sugar production and the declining production of coffee is manifest. As soon as the island became an American possession it was believed that free trade would shortly be established between it and the United States. In the organic act establishing the present government of Porto Rico, which went into effect on May 1, 1900, it was provided that all duties on articles going from Porto Rico to the United States or from the United States to Porto Rico should cease not later than March 1, 1902, and that they might be removed earlier by Presidential proclamation, if a local system of taxation had been established before that date. In point of fact such proclamation was made July 25, 1901, and Porto Rico has had free trade with the United States since that date. This meant that Porto Rican sugar, which previously had been paying duty, was admitted free to the immense market of

the United States, while foreign sugar continued to pay duty. It is true that the Spanish market was lost to Porto Rican sugar through the fact of annexation, but that market had never been quite free, and even before annexation the quantity of sugar sent to Spain was trifling compared to that sent to the United States. Even if Spain at present admitted Porto Rican sugar on the same terms as before 1898, it may be doubted whether the quantity shipped to that country, which in 1905 amounted to the insignificant total of 3,990 pounds, would show any material increase. The annual consumption of sugar in the United States since 1902 has been considerably in excess of 2½ million tons, of which only about half a million tons were covered by the domestic production. The opening of the United States market to the free importation of Porto Rican sugar, therefore, meant that an island containing some of the best sugar land in the world, all close to the sea, with an abundant supply of cheap labor, was to enjoy the privilege of catering to a demand for 2 million tons of sugar which its competitors (except Hawaii) could aid in supplying only after paying a duty of about 1½ cents per pound. Under these circumstances it was not surprising that the production rose from 58,000 tons in the fiscal year 1897 to 203,000 tons in the fiscal year 1906, and that all the land suitable for sugar culture was soon taken up.

With coffee the conditions were almost the reverse. Previous to 1898 the coffee industry was the most important in the island, with an exportation of 50½ million pounds in 1888 and of very nearly 58 millions in 1896. Of the latter amount a little over 15 millions went to Cuba, 16 millions to Spain, 11 millions to France, or a total of 42 millions for these three countries—that is to say, 71 per cent of the total exports of coffee. As soon as Porto Rico became an American possession it became a foreign country to Cuba and Spain, which at once imposed duties on Porto Rican coffee (as high as 8½ cents a pound in the case of Spain); and as the commercial treaty between France and Spain ceased to apply to Porto Rico, France raised her duty on Porto Rican coffee to the maximum. At the same time, annexation did not open any new market in the United States, as was the case with sugar, for coffee had been admitted free into the United States since May 1, 1872; but the quantity of Porto Rican coffee that came to the United States had always been small, the maximum of 6½ million pounds being reached in 1883, while from 1887 to 1897 it never reached a million pounds, being generally less than half a million pounds. The 6,314,686 pounds of Porto Rican coffee shipped to the United States in the fiscal year 1903 seemed to indicate that the United States was preparing to absorb the product of its dependency in larger quantities than in the past, but these hopes were disappointed the next year, when the shipments to the United States fell to 2,415,559 pounds, and still more in the fiscal year 1905, when they amounted to only 1,519,149 pounds against 6,242,120 pounds sent to Cuba and 3,990,730 pounds to Spain. The total exports of Porto Rican coffee in the fiscal year 1904 amounted to only 16,849,739 pounds, which is less than for any year since 1870, with the exception of 1877.

CULTIVATING SUGAR CANE.

It is stated that the sugar production of Porto Rico can not be expected to increase much beyond the figure of 203,000 tons in the fiscal year 1906, or at most beyond 300,000 tons. This estimate leaves out of consideration the fact that the present average production in Porto Rico is barely 2 tons of sugar per acre, while in Hawaii, as the result of fertilizers, accompanied by irrigation, it is now on an average 6 tons, and in some favorable locations the enormous production of 15 tons per acre has been reached. In Porto Rico natural fertilizers abound and there is ample water for irrigation wherever needed. If the average production in Porto Rico were raised to the average of Hawaii, it would mean that without increasing its sugar area the island could produce 600,000 tons of sugar, or more than one-fourth the total sugar imports into the United States. Even at present the average production of sugar per acre in Porto Rico is about twice that in Louisiana.

The sugar cane is a perennial plant, which, when left to itself, continues to grow from the same stock indefinitely, or, to speak more accurately, by continually throwing out new roots and sprouts and absorbing the old ones. It blooms, but produces no seed, so that reproduction is entirely from buds which grow out of the joints. The moment of blooming marks the maturity of the stalk—that is to say, the moment when it contains the largest amount of sucrose, the essential element of sugar. Previous to that time, a larger amount of reducing sugar is present, especially in the younger stalks; after blooming, the sucrose is reconverted into invert sugar. In determining the most suitable moment for cutting, therefore, considerable expert skill is required. The appearance of the cane is the guide; its color becomes lighter; the leaves, excepting those at the top, become dry; the stalk becomes shiny.

If the cane be allowed to stand too long, rain may cause it to sprout and turn green; a process of inversion then takes place and a part of the sucrose is changed into invert sugar. The cane leans over till it touches the ground, roots spring from the internodes which touch the ground, and the respective buds develop shoots, all at the expense of the juice in the old stalk. Moreover, old cane becomes hard, increasing the cost of cutting and rendering the operation of grinding much more difficult.

Sugar cane requires a humid but not wet soil. It is essential, therefore, that the soil shall retain the moisture imparted by the rain, but not to such extent as to convert the field into a swamp. As the roots of the cane do not penetrate deeper than about 19 inches, they must be able to reach the moisture at that depth. This fact largely determines the adaptation of certain lands for sugar. It explains why the level calcareous and alluvial lands along the coast are sugar lands, and why the interior regions are unsuitable for this crop. Where there is no natural drainage, its place must be supplied by artificial drainage; and where the rainfall is insufficient to supply the necessary amount of moisture, recourse must be had to irrigation.

As the plant produces no seed, it has to be reproduced from the buds at the joints. For this purpose the stalk is cut up into pieces 8 to 16 inches long, the parts near the root being rejected. Two or four of these pieces are placed in holes on the prepared field, either horizontal or upright, and covered with earth to a depth of not more than 1 inch. The vitality of the plant is so great, and the humidity of the climate generally so abundant, that a piece of stalk merely thrown on the ground will send forth sprouts, but these do not produce as vigorous plants as those systematically planted.

So long as the cane is low, frequent weeding is necessary. After the cane has grown high enough to shade the ground, which occurs after about six months, it chokes any weeds that may spring up. Next, the new roots which spring from the base of the plant have to be covered with earth to afford a better hold to the plant and to increase its nutrition. After the third or fourth weeding it is also necessary to remove the younger shoots which continually spring from the roots, as these would have a period of maturity different from that of the older stalks, which would entail considerable trouble in separating them, or, if they were all cut at once and crushed in the mill, the resulting mixture would contain a larger amount of reducing sugar, which would render the work of evaporation more difficult and diminish the yield of crystallizable sugar.

The cane would keep on growing indefinitely, but it is found more economical to plant it anew after from four to seven years, while in Louisiana it has to be planted every year. As the cane grows, the lower joints begin to shed their leaves. By stripping these leaves off at the proper time, the amount of sugar in the cane is increased and the time of blooming is retarded. The time that elapses between planting and cutting varies with the season and the locality. So long as the stalk has not entered the period of decay, its sugar content increases with age, but conditions of weather may require that it be cut before the maximum of sugar content is reached. The period varies between twelve and twenty months. The cutting is done with a blow of the machete, no satisfactory

machine having yet been devised; the cane is loaded on a wagon drawn by oxen and conveyed to the factory, where it is crushed between rollers, and the juice evaporated, the result being raw sugar, called also brown sugar. Any raw sugar of less than 90 degrees polariscopic test is called "muscovado." In former times the mills, called "trapiches," were small, each grinding the produce of about 100 acres. Oxen furnished the power for crushing the cane. In 1879 there were 553 such mills on the island. It is the product of these old mills, imperfectly freed from acids and invert sugar, that is generally designated by the term muscovado.

MANUFACTURING SUGAR.

The American occupation wrought a complete change in the sugar industry. The beginning of the change was in factory methods. Mills driven by bull power have nearly disappeared, and the Jamaica train and open-kettle process are fast giving way to multiple effects or evaporators, so that to-day, in addition to the well-equipped centrals, many of the smaller factories are installing modern machinery and enlarging their capacity so as to grind cane for the neighboring plantations. The owners, realizing the great waste of burning up partially exhausted bagasse, are adding to the number of their crushers. Nine-roller mills are now to be found in districts where formerly the extraction of single and double crushing was considered sufficient, and orders have already been placed for two 12-roller mills, one of which is to be preceded by a crusher. During the fiscal year 1906 two new factories ground their first crop, three more will be ready for the next season, and at least two sugar centrals are planned for the crop of 1908. The largest factory—the Guanica Central—has a capacity of 2,500 tons of cane daily, and several others grind 500 tons daily.

The cost of erecting one of these factories is from \$350,000 to \$500,000, and some plants cost a million dollars or more. The tendency is for the owners of factories to buy up the surrounding land and raise their own cane; but as the organic act limits the amount of land which a corporation may hold to 500 acres, the bulk of the cane is furnished by independent planters or colonos. To these, the factory usually pays 5 per cent of their cane in sugar—that is to say, for 100 tons of cane they get the price of 5 tons of sugar. In some of the larger centrals the payment is based on the percentage of sugar extracted, nine-sixteenths of the product being returned to the colonos. They are either paid in cash or credited with the amount.

The growing scarcity of wood and the high price of coal make it more and more imperative that a factory should supply its own fuel. Chemists are employed even in the smaller factories, and the losses in manufacture, which used to be considerable, are steadily decreasing, thanks to better extraction, crystallizers, and chemical control. This explains the fact, noted under the head of "Commerce," that, while the sugar production since 1898 has increased nearly fourfold, the production of molasses has remained practically stationary. A large amount of the juice that under former methods was converted into cheap molasses is now converted into high-priced sugar. The sugar industry is one of those fortunate industries in which, with proper care, there are practically no waste products. The leaves and tops of the cane very nearly suffice, with a little additional pasture, to feed the oxen that haul the cane; the crushed stalks, called "bagasse," are passed at once by a belt conveyor under the boilers, where they serve as fuel for evaporating the juice, and if, as is sometimes the case, the bagasse furnishes more fuel than is required it is stored up for future use. The ashes are returned to the land as fertilizer. The molasses is sold as molasses or distilled into rum, some of it fed to cattle, and the last dregs of it are used as fertilizer.

PROGRESS IN SUGAR INDUSTRY.

From the factories the use of modern methods spread to the fields. Steam plows, electric trains for hauling the cane, mechanical unloaders, are now in common use. Many devices have been tried to avoid the waste of labor arising from the necessity of loading the

cane first on ox carts, dumping on the ground at the railway switch, and loading again on the railway car, but, aside from portable tracks and light cars, no satisfactory method has yet been found. The foremost aim at the present time is to increase the yield per acre. As already noted, this is only 2 tons per acre in Porto Rico at present, whereas in Hawaii it is 6 tons. The soil of Hawaii is not superior to that of Porto Rico, nor is the climate more suitable for the production of sugar cane. The difference arises solely from the scientific application of fertilizers, from irrigation, and intensive cultivation by the latest methods. That these methods are spreading in Porto Rico is evidenced by the great increase in the imports of fertilizers and of irrigation appliances.

In many parts of the island irrigation is unnecessary, in others water can readily be pumped from adjacent rivers or supplied by gravity, but on the southern coast the protracted droughts and the scarcity of streams make it necessary for planters to have recourse to wells. Each well consists of a series of pipes driven into the earth to an average depth of 50 feet; suction pipes connect the wells, and water is raised to the surface and distributed by means of pumps driven by steam or gasoline motors. Successful experiments have been made with windmills to utilize the force of the trade winds which blow steadily during the dry season. Lands which lie at an elevation too great to permit of the use of suction pumps have hitherto remained uncultivated, but the recent trial of a pump forcing water to the surface by compressed air would seem to have solved the problem of irrigation at high levels.

No attempt has yet been made to refine sugar in Porto Rico, although the abundant water power and the cheap and abundant labor would seem to offer special inducements for that purpose. According to a statement by Willett & Gray, the centrifugal sugars arriving at New York from Porto Rico average fully 96 degrees polarization, and the muscovado sugars 90 degrees. The proportion of muscovados is about 5 to 10 per cent of the total receipts of sugar from Porto Rico.

The capital invested in the modern sugar industry in Porto Rico is mostly American, but there are also two French and one Belgian company.

Fortunately, Porto Rico is comparatively free from parasites and insect pests. The cane borer, it is true, is widely disseminated, but the resulting damage is inconsiderable and is usually confined to wet lands. The custom of burning off the trash after cutting the cane is also a great check to the propagation of the borer and other insects.

COFFEE CULTURE AND TRADE.

The relative positions which coffee and sugar have held in the exports of Porto Rico since 1841 have varied greatly. Sugar was far in the lead until 1879; from that year until 1889 the two products ran nearly abreast; from 1890 to 1897 coffee was far ahead of sugar; but since then the relative positions of the two have been once more completely reversed.

The loss of the protected Spanish and Cuban markets, without any compensatory gain in the American market, was not the only cause of the enormous decline in the coffee industry after 1897. The coffee crisis of that and subsequent years was not confined to Porto Rico. It affected to almost the same extent Brazil, Venezuela, Colombia, and Central America, which certainly were not influenced by the results of the Spanish-American war. The main cause was overproduction in all the coffee countries, but especially in Brazil, an overproduction caused by the high prices that prevailed from 1890 to 1896. Many Porto Rican planters, in order to extend their plantations so as to reap a larger share of the expected profits, mortgaged their estates heavily, at rates of interest quite commonly as high as 12 per cent. The reaction had set in even before the American occupation, many planters being unable, by reason of low prices, to pay the interest on their mortgages. Added to this was the confusion arising from the change in the money standard, which, while resulting in a virtual increase of wages and of the cost of living, was unaccompanied by any compensating rise in the

price of coffee. The severest blow of all, however, was the hurricane, which, striking the town of Humacao at midnight on August 7, 1899, swept westward across the center of the island throughout August 8, destroying practically all habitations in the center of its path, burying the coffee plantations under the debris of the trees planted to shade them, and drowning everything in a torrent of rain, which was reported in one place as high as 11.5 inches in an hour. It was estimated that at least two-thirds of the coffee crop was destroyed. As the coffee tree takes about five years before it begins to bear fruit, it is rather surprising that in the fiscal year 1903, only four years after the hurricane, the coffee exports had once more reached 35 million pounds, or more than five-eighths of the maximum on record, namely, 58 millions in 1896, and more than five-sevenths of the figure for 1897. In the fiscal year 1905 the exports had again dwindled to less than one-half the figure of the fiscal year 1903, but in the fiscal year 1906 they had gone up to 28 million pounds.

Much of the coffee land is going back to forest, much is being sold for taxes, and probably much more will be sold before conditions improve. Many planters continue, in a half-hearted way, to work plantations in which they have long ceased to have any equity whatever, the mortgagees preferring this to actual possession, in the hope that times may grow better. All competent judges interested in the welfare of the island and of its population deplore this decay of a once flourishing industry, which furnished labor of an easy sort for men, women, and children, in a cool, refreshing atmosphere in the mountainous center of the island, remarkably free from unhealthy influences and noxious insects. It is doubly regrettable because it strikes the very region where the pure Spanish element thrives best and where it predominates more than elsewhere in the island, far better than in the hot coast lands which constitute the sugar area. Coffee is a semiforest crop of such nature that the soil under it is protected. As a soil fixer and protector, with its shelter growth of leguminous trees, it is next best to the forest itself; a shade tree can be selected which will afford to the coffee the necessary protection and at the same time yield timber. If the price of coffee should be doubled to the grower, thousands of acres unfit for other purposes would be converted into hundreds of small but prosperous farms.

To a large extent the future of the coffee industry probably lies in the adoption of more rational methods of cultivation. At present the yield in Porto Rico is only 200 pounds per acre, whereas in Brazil and Java, by improved methods, 900 pounds per acre have been obtained. In Brazil trees have been made to bear a crop worth picking within two years after planting; in Porto Rico they take at least five years and often more, which means that during that time there is no return on the capital invested.

MODERN METHODS IN COFFEE INDUSTRY.

The agricultural experiment station at Mayaguez is making efforts to introduce modern methods, and is meeting with a ready response among the more intelligent planters. The first aim is to secure better stock. Hitherto the young coffee trees have been obtained almost invariably from the seedlings that grew spontaneously in the plantations. These were necessarily the product of coffee beans dropped either before or after the normal time of maturity, and hence almost necessarily inferior. It was the survival of the unfit. Growing up without any care among the weeds, or in the dense shade of the plantation, they were in most cases feeble and unhealthy, mere switches with few leaves. Instead of this, the modern method aims to devote the utmost care to the young plant from its very start. All the coffee lands of the globe are laid under contribution for the most select seed of the most promising varieties. This seed is planted in a nursery, where the amount of light and humidity are carefully regulated, irrigation and drainage being matters of daily attention. Of these seedlings the scientific grower selects for transplanting none but the most vigorous. On the German plantations in Guatemala the rule is to reject all seedlings that do not bear at least ten branches or cruces,

as they are called. These seedlings are next taken up with a cubical block of earth adherent to them, and, in the most improved plantations, are placed in bamboo baskets of the requisite size, in order to prevent, so far as possible, all disturbance of the earth around the roots. In these baskets they are carried to the plantation, preferably on a rainy day, and, while still in the baskets, are placed in holes prepared to receive them, the transfer being made as quickly as possible, and each plant being watered as soon as it is set in its hole, so as to make the soil adhere to the roots at once. In this way the shock of transplanting is reduced to a minimum and the need of replanting is almost entirely avoided. Plantations thus carefully set out present a uniform growth of vigorous trees, with berries all over them, while those raised by the old method are irregular, with berries only on the top branches.

The coffee bush thrives in any part of the island, some vigorous specimens having been found practically at sea level, while others grow on the very summits of the mountains. Experience, however, has taught that the highlands are more suitable for coffee. Even if this were not the case, the value of the lowlands for the production of sugar would prevent their being devoted to coffee. The most famous coffee regions are those back of Mayaguez and about Lares near the west end of the island. Farther east, the extent of the coffee area diminishes, though some coffee is raised close to the east coast. The excessive humidity of the northeast corner, however, is a drawback to the operations of a coffee plantation. The question of shade has been much disputed. In Brazil, which furnishes two-thirds of the world's production, coffee is grown without shade, and this is deemed to be one of the factors which enable that country to undersell its competitors. In Porto Rico, luxuriant coffee bushes are found producing an abundance of berries, though growing wild without shade; yet planters have hitherto been unanimous in regarding shade as necessary in a plantation. The probability is, as suggested by O. F. Cook, that the advantage which shade trees afford is not so much in the shade as in protection against wind and in enriching the soil. These two advantages might probably be secured by means which would be less expensive than the planting of shade trees.

The coffee tree blooms in February and March, and the fruit is gathered in October and November. It is picked off the tree by hand and placed in baskets or sacks. In this labor, men, women, and children are employed. It is then taken to the factory, where it undergoes the process of hulling, which consists in removing the fleshy pulp that incloses the two beans. This is accomplished either by the dry way or by the wet way, the latter being the more modern. In the dry process the berries are spread on platforms and exposed to the sunlight, care being taken to cover them as soon as rain threatens. In one plantation, near Adjuntas, the berries are spread on rolling platforms which can be shoved under the house when necessary. As soon as the berries are dry, they are passed through a mill which breaks the dried pulp, leaving the beans free. This process is used only by planters who have not money enough to invest in machinery. Modern plantations use the wet process, in which the fresh berries are placed in a pulping machine, which crushes them and removes the pulp by means of washing in water.

The coffee is shipped to market in jute bags, which come from India, costing 6 cents a bag. The same kind of bag is also used for sugar and coconuts. As it does not pay to return them, a new supply of several million bags is needed every year. It has been suggested that jute might be raised in Porto Rico and a local industry developed to supply the demand for bags, but it may be doubted whether Porto Rican labor, cheap as it is, could compete with the still cheaper Hindu labor, and whether Porto Rican land could be devoted to this crop with greater profit than may be found in other crops.

TOBACCO.

Tobacco is rapidly becoming one of the most important crops of Porto Rico, giving employment not only to a large number of field laborers but also to a growing number of factory hands. It is fortunate that the tobacco area is practically coextensive with the coffee

area, for the labor affected by the stagnant condition of the coffee industry is thus enabled to pass readily to the more prosperous tobacco industry. In this way and in others, the American occupation has introduced a considerably greater diversity into the people's employments, enabling them to pass from one to the other. Formerly a laborer in a coffee plantation hardly ever moved more than a few miles away from the place where he was born. The planting and harvesting of coffee was the only occupation known to him, and if that failed he was helpless. Now, when the coffee trade languishes, he can go to a neighboring tobacco plantation, and the high wages paid in the prosperous sugar industry are even attracting considerable numbers from the mountains to the lowlands.

The city of Caguas is the center of the main tobacco area. Large tracts of land in the interior valleys have been cleared for cultivation and covered with cheesecloth, under which tobacco wrapper is grown. The cost of this method of cultivation averages \$500 per acre, but the outlay is more than repaid by the increased yield and better quality. One company has already planted 250 acres under such shelter, and from 1,200 to 2,000 people find employment in their field work alone. In former days Porto Rican tobacco was largely exported to Cuba and thence sent to the markets as Cuban tobacco, being passed off as the famous *Vuelta Abajo* product. This practice has entirely ceased. San Juan manufactures all the cigars required in the island, leaving a little for export. Three factories for making cigars have just been erected. These are large, roomy, well-lighted and well-ventilated three-story buildings, well equipped not only for production but also from a sanitary point of view. At Bayamon an \$80,000 cigar factory has been built. At Caguas there is a large building devoted to tobacco sorting, drying, curing, and packing. It is intended to have a railway run from the heart of the Caguas tobacco region to San Juan direct to the wharf and unload from the cars to the vessels. One company in the fiscal year 1906 constructed at various points in the island 6 warehouses, in addition to a factory to accommodate upward of 2,000 hands. During the coming year, apart from the purchase of a large building to be remodeled for the purpose of a tobacco factory, it contemplates the construction of 6 concrete warehouses, 70 barns for curing tobacco, and 50 houses for farm hands. The fact that in the fiscal year 1906 the exports of cigars to the United States amounted to \$3,069,576, or 86 per cent of the total shipments of tobacco from Porto Rico to the United States, illustrates the tendency to manufacture in the island itself all the tobacco produced there, a tendency readily explained by the abundance of cheap labor and low rent.

In a climate like that of Porto Rico, tobacco, like almost any other crop, may be planted at any time of the year, but experience has shown that winter is the best. Plowing is commenced, if on level or slightly rolling land, in August or even July. About a month later the land is plowed again, and once more in October. As a rule planting is begun early in November, but in some localities it may be done at any time from the end of October to the end of February. The rainfall at that time is less and the temperature is lower, but though this delays the growth, it improves the aroma. The seed is sown in the seed beds about the end of August and in forty-five to sixty days the plants are large enough to be transplanted, having about eight leaves. It is important to gauge the time of planting so as to avoid excessive rainfall and extreme drought during the growing season and also to have the harvesting and curing period occur in comparatively dry weather. Plants set out in the field about the beginning of November are ready for harvesting about February 1, which enables the curing to be done in February and March, the driest of the year.

In the cultivation of tobacco, as in that of coffee, the old methods are gradually giving way before the new. The old wooden plow is being replaced by iron plows; instead of taking the seed at random from suckers, it is raised from plants specially set out for the purpose, and new varieties are imported. The new system of picking the leaves for wrappers from the standing plants and drying separately from the stalk has given very good results. Wrappers treated in this way have greatly improved in quality and have brought a much better price.

CITRUS FRUITS.

It was estimated that in 1905 there were 7,000 acres under cultivation in citrus fruits in Porto Rico, of which about 70 per cent were planted in oranges, 25 per cent in grape fruit (pomelo), and 5 per cent in lemons. This acreage is continually increasing, and it is thought that in 1906 some 1,500 additional acres of citrus fruit were set out. This acreage has all been set out since the American occupation, and although sufficient time has not yet elapsed for the marketing of a full crop, yet some shipments were made from these groves in the winter of 1904-5 which reached New York in good condition and brought a fair price. This has demonstrated that Porto Rican oranges, if intelligently handled, have the necessary keeping qualities and will bring good prices. In past years shipments were made of the native oranges gathered from trees scattered around, but they were shaken from the trees, carried to the shipping point in baskets on pack animals, and then packed promiscuously in boxes and barrels without any attempt at sorting. Naturally this fruit arrived at its destination in poor condition and required so much rehandling and sorting that there was very little margin for profit, and the Porto Rican orange acquired the reputation of being a poor shipper. This bad impression, however, will be overcome now that the oranges receive intelligent treatment from the time they are picked to the time they are put on board the steamer.

The increase of the fruit industry in Porto Rico may be gathered from the fact that up to June 30, 1906, 18 fruit companies had been registered in the office of the secretary of Porto Rico, while on June 30, 1905, the number was only 11.

The present rate of freight from Porto Rico to New York on a box of oranges is about 28 cents, as compared with 35 cents from Cuba (and 56 cents duty), 98 cents from California, and 72 cents from Florida. This allows quite a margin in favor of Porto Rico. The two steamship companies running between Porto Rico and New York have given assurance that as soon as the quantity of fruit warrants they will make provision for shipping citrus fruits on a large scale. A beginning of such provision has already been made.

Nursery trees of all kinds can be bought in Porto Rico at \$25 a hundred; land, according to location, at from \$20 to \$100 per acre; and unlimited labor can be secured at from 30 to 50 cents a day.

OTHER FRUITS.

Pineapples.—Pineapple culture has been taken up largely by the orange growers as a means of deriving some income while waiting for their groves to come into bearing. When planted between the rows of trees, about 4,000 pineapple plants can be set out to the acre without interfering with the trees, and when planted by themselves from 8,000 to 10,000 pines can be set out to the acre. The pines which appear to grow best in Porto Rico are the Red Spanish, the Cabezona, the Pan de Azucar, and the Smooth Cayenne. Red Spanish is the favorite with the planter, as it has shown good keeping qualities, and shipments have brought on an average of \$2.50 per crate. The good returns of 1904 resulted in the planting of a greatly increased acreage, and it is estimated that at least 4,000,000 plants were set out in 1905. The climate of Porto Rico seems to be peculiarly adapted to the raising of pineapples, and careful cultivation and a little fertilizing show a corresponding increase in the size of the fruit. Several canning factories are now in operation, and as a good supply of fruit is assured more factories will soon be erected.

Cocoanuts.—Cocoanut trees are scattered all through the island, but grow to best advantage along the coast. The tree is particularly thrifty on low ground near the coast where the water table comes to the surface, on soil that is almost worthless for any other purpose. Where these trees can be found in any large number close to some shipping point the cocoanuts can be handled quite profitably. There are a few groves on the island now in full bearing and many more are being set out. About 50 trees are planted to the acre, producing about 10,000 nuts annually, worth \$150 on shipboard. A good crop can be gathered at the end of the seventh year with a corresponding increase in the yield as the trees become older. The

cost of harvesting and loading is about \$24 per acre. The trees require very little care from the time they are planted until they come into full bearing, and land suitable for the purpose can be bought as low as \$10 per acre, but the price increases according to the proximity to a shipping point.

Bananas and plantains.—To no other two products do the natives owe so much as to the banana and plantain, two fruits which necessarily go together, as they are hardly distinguishable, except by an expert. From playa plain to mountain top, wherever any cultivation has been carried on, the beautiful plants, of various heights, with broad, herbaceous leaves, 8 or 10 feet long, are seen. They are grown from the suckers which appear at the base of large trees. In one year from the time of planting, the first fruit may be gathered. The product on rich land is enormous in some cases, as much as 60,000 pounds of fruit per acre. Many varieties are grown, the "date" and "apple" being considered by the natives the choicest. Both bananas and plantains are used to a large extent to shade coffee trees, especially the young plants. Bananas being free of duty in the United States, Porto Rico would encounter in the American market the competition of Central America, where this industry has been developed on an enormous scale by the United Fruit Company, whose steamers take the fruit directly to New Orleans, New York, or Boston. As regards distance, Porto Rico would hardly have an appreciable advantage over the Central American ports. As part of general fruit cargoes requiring similar treatment, however, it is probable that Porto Rican bananas will shortly appear on the American market.

Mangoes, aguacates, and breadfruit.—The most promising fruit tree in the vicinity of Mayaguez is without exception the mango. The trees are conspicuous everywhere. They are never cultivated, but may be found in waste places, and especially in old fence rows, where they were planted years ago as wind-breaks. Their greatest value is in the amount of firewood they produce, the top being cut off every year and used for fuel. Twelve of the best varieties of India received at the experiment station have been inarched (a process of grafting) into large trees, and if this experiment is successful the tree may become a source of large income.

The aguacate grows vigorously all over the island, and a large amount of magnificent fruit is produced, fully equal to the Florida product.

Of the breadfruit, both the seed-bearing and the seedless varieties are found all over the island. The trees are quick growing, but succeed best when not transplanted. The seedless variety is propagated from cuttings.

OTHER AGRICULTURAL PRODUCTS.

Cacao.—Cacao is not grown commercially on the island, but a good deal is grown for home use. The climatic conditions for its growth are excellent. Considering that the neighboring Republic of Santo Domingo is fast becoming an important producer of cacao, as the West Indian islands of Trinidad and Grenada have been for a good while, and that Venezuela, with a similar climate, is famous for the quality of its cacao, it would seem that this industry might be advantageously substituted to some extent for the coffee industry. As manufactured cacao, in various states of preparation, pays duty in the United States, varying from 2½ to 5 cents a pound, Porto Rico would in this case enjoy the advantage of free access to a protected market, on condition, of course, that the article were manufactured on the island, unmanufactured cacao being on the free list. This manufacture would probably enjoy in Porto Rico the same advantages which have caused most of the tobacco to be manufactured in the island itself, and would thus be another element tending to diversify the employment of the Porto Rican laborer. As the conditions of cacao cultivation differ but little from those of coffee cultivation, the change from the one to the other could be made with little inconvenience. The rapidly expanding market for cacao has caused nearly all the producing countries to increase their output during the last ten years 100 to 150 per cent, and there is

every indication that this prosperity is only the beginning of a larger expansion. Cacao has the advantage over coffee and tea in that it is not only a stimulant, but also a food, so that it is preferable from the social standpoint. The increase in imports of raw cacao into the United States during the last ten years has been on an average 15.69 per cent a year. It would seem that in catering to so good a customer Porto Rico might find the advantage which she has hitherto vainly hoped to reap from the recovery of the coffee industry.

Cotton.—Cotton was grown in the West Indies long before its introduction into the Southern States of the Union. The civil war in the United States greatly stimulated the production of cotton in Porto Rico, but when this stimulus was removed the cotton exports from the island fell to almost nothing. Thanks to the public-spirited efforts of Messrs. Gandia and Stubbe, this branch of agriculture promises again to assume important proportions. These gentlemen have not only distributed gratis the best sea-island cotton seed, but have issued pamphlets in Spanish to the farmers, instructing them how to obtain the best results, both in the cultivation and harvesting of their crops. From 6,000 to 10,000 acres were in cultivation in 1904, and such communities as Camuy and Isabela are feeling the benefit of it. Sea-island cotton seems to thrive best. During 1904 the farmers received from 5 to 7 cents for their cotton. Now that a ginning plant has been set up in San Juan, a large export of this staple is assured. There is no boll weevil in Porto Rico, and with reasonable care its introduction can doubtless be prevented.

The worst enemy of cotton in the island is the ordinary cotton caterpillar, which can easily be exterminated with Paris green. Unfortunately, the use of insecticides is almost unknown to the planters of the island, and, in fact, it is difficult to get a supply of Paris green outside of San Juan. As a result, whole cotton fields have been devastated. Before any market can be obtained in this industry, therefore, the farmers will have to learn the use of insecticides and also of fertilizers, for these are an essential factor in cotton cultivation on the sea islands of South Carolina and Georgia.

Fiber plants.—The insular government has decided to take up the growing of sisal on a commercial scale, setting out 100,000 plants under the direction of the agricultural experiment station. As the imports of this article into the United States are now 15 million dollars a year, this product would find an unlimited market, but would have to compete with the Yucatan sisal, which is admitted free. Sisal will grow on very poor land, but in order to secure a profit one machine has to handle the product of a large area, and it may be doubted whether there is enough poor land in Porto Rico to warrant extensive investments in this direction. Land that sells for \$100 to \$200 an acre is too valuable for so cheap a product as sisal. Experiments are being made with other fiber plants, but they will probably be found subject to the same limitation. It has been suggested that Culebra Island, which seems fit for little else, might be made the home of an extensive sisal industry.

The insular government is considering the advisability of importing from Panama and Colombia the jipa jipa fiber plant used in the manufacture of Panama hats. The hat-making industry gives employment to many women in Porto Rico, who use for this purpose either the imported fiber from Panama and Colombia or the split leaves of the native palm. This is a healthy home industry, which might doubtless be extended if an abundant supply of material were ready at hand. Factories for the manufacture of Panama hats have been established in three towns.

Other vegetables.—Experiments have been made with sugar beets, in the hope that some soils on the south side of the island, which are so alkaline that sugar cane will not grow on them, may be made to grow sugar beets, which will remove the alkali, so that these soils may ultimately produce cane.

Porto Rico imports annually large quantities of rice. It is thought that most of this can be raised on the sugar lands along the coast, where irrigation is easily applied, and where a rotation of crops will soon be needed to allow the soil to recuperate.

Considerable attention has lately been given to the yautia, which ranks third among the root crops of Porto Rico, next to the sweet

potato and yam, and because of its high productiveness, facility of culture, and adaptability it is in many respects superior to either of the crops named. With 10,000 plants per acre, 10 to 15 tons of tubers are obtained per acre, to which may be added 5 to 8 tons of root stock, used for the table, as a source of starch, or as stock feed.

As the mulberry grows vigorously all over the island, the experiments in silkworm culture now in progress look very promising. The large amount of cheap labor, especially of women and children, which the island affords indicates that this industry, which is essentially domestic and can be carried on in conjunction with other farm work, would be particularly appropriate to Porto Rico.

The culture of the grape was discouraged in Spanish days, lest it compete with the wines of Spain. Experiments have shown that the product of the Porto Rican grape is equal to the best.

WINTER MARKET FOR PORTO RICAN PRODUCTS.

Four million dollars' worth of vegetables were imported into the United States in the fiscal year 1905, most of them subject to high duty. With its mild climate and in the absence of any tariff barrier, Porto Rico ought to be able to supply a large part of this demand, especially fresh vegetables for the winter market, which, with proper care, could readily be laid down in New York in good condition six days after leaving the field in Porto Rico. Hitherto the vegetables appearing on the Porto Rican markets have been of inferior quality, but experiments conducted at the Mayaguez Agricultural Station have proved that this is due simply to imperfect methods of cultivation, and that, when the proper methods are used, many of the vegetables grown in the United States can be raised with equal perfection in Porto Rico. Bulletin No. 7 of that station, by H. C. Henriksen, which may be obtained by applying to the United States Department of Agriculture, gives directions for vegetable growing in Porto Rico and enumerates the crops that have given the best results. Among these are beans, beets, carrots, chard, chayote, collards, cress, cucumbers, eggplants, horse-radish, kale, kohlrabi, leek, lettuce, lleren, muskmelons, mustard, okra, onions, parsley, parsnips, peas, peppers, radishes, pumpkins, squashes, tomatoes, and watermelons. It is thought also that asparagus and celery might do well under proper care. In the case of watermelons, it is suggested that in spring and early summer, before this vegetable can be obtained anywhere else, the Porto Rican article might obtain good prices. The great advantage of the Porto Rican farmer in this respect would be that he is practically independent of the seasons, being able to raise almost any crop at the very moment when it brings the best price. Another great advantage is the abundance of water for irrigation almost everywhere on the island.

STOCK RAISING.

The cattle industry has always held a prominent place in the island, and Porto Rican cattle have long been famous among its exports to the West Indies and Central and South America. The great size and fine appearance of the native cattle attracted the attention of the Americans at the time of occupation. Ox teams do practically all the hauling over the primitive roads of the interior and a good deal of it even over the macadamized roads. A large amount of merchandise is in this way carried over the San Juan-Ponce military road, and owing to the easy grades of the road and to the strength and endurance of the cattle this form of transportation is much more expeditious than would seem possible. Oxen also do most of the plowing and hauling on the plantations. Their breeding is almost a necessary complement of the sugar industry, as the leaves and tops of the cane suffice to feed them, thus furnishing the motive power for hauling and incidentally a supply of meat for the laborers and an article of export.

The native horse, though small, does a surprising amount of work. Owing to his sure-footedness and comfortable gait, he makes a capital mount.

Since the American occupation, efforts have been made to improve both cattle and horses, the former in regard to early maturity

and milk production, the latter in regard to size and healthfulness, a great many of the native horses being unsound, probably owing to long-continued inbreeding. Sheep do not seem to thrive on this warm and humid island, but goats, swine, and poultry do very well.

FERTILIZERS.

The question of fertilizers is a subject of growing importance and receives ever increasing attention both from the insular government and from the public. As stated elsewhere, many lands on the island, owing to long continued cultivation without artificial assistance and without rotation of crops, are in the exhausted condition called "ruinate," and are now either entirely waste or at most used for pasture. Even lands which are still fairly fertile can be made to yield much larger crops by the aid of fertilizers. They have been tried on some sugar plantations with such signal success that planters no longer hesitate to spend money to renovate their soils. In the pineapple and citrus-fruit industry, large amounts of fertilizers are now used, and a fertilizer factory would have a good opening. Circular No. 6 of the Porto Rico Agricultural Experiment Station, at Mayaguez, by D. W. May, special agent in charge of the station, contains a very instructive account of the fertilizers available in Porto Rico and of the best methods of applying these as well as imported fertilizers.

The rapid increase in the use of fertilizers is shown in the following table:

IMPORTS OF FERTILIZERS INTO PORTO RICO, 1901-1906.

IMPORTED FROM -	1901	1902	1903	1904	1905	1906
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Belgium.....	4,218					
France.....	29		2,798	8,714	106,000	117,186
Germany.....		8,872				
United Kingdom.....		84	45			17,280
United States:						
Domestic.....	19,459	11,965	38,074	88,563	184,653	246,002
Foreign.....				73	3,368	47
Total.....	23,706	20,921	40,917	97,350	294,021	380,515

The island itself contains a vast store of fertilizer in the bat guano deposits in the innumerable caves with which the limestone region is honeycombed. An analysis of that guano gave the following results:

ANALYSIS OF BAT GUANO FROM PORTO RICO.

CONSTITUENT.	Per cent.
Total phosphoric acid	12.93
Total potash .....	.96
Total nitrogen (nitrates present) equivalent to	3.32
Ammonia	4.03
Moisture	13.86
Loss on ignition	52.33

In many caves this guano covers the floor to a depth of several feet. In some localities it is hauled out and delivered for \$3 a ton.

Marl and phosphate rock are found in many parts of the island, but little is mined.

A concession to work the phosphate deposits of Mona Island, in Mona Passage, west of the mainland of Porto Rico, has been granted to Messrs. Porrata-Doria and Contreras. The following statements are condensed from an account of these deposits courteously furnished by Señor Don Miguel de Porrata-Doria, of Ponce:

Mona Island is situated 42 miles from Porto Rico, in the channel between it and Santo Domingo. It rises from the sea like a fortress, with high, perpendicular cliffs, and is encircled by a coral reef, which makes it inaccessible except to small vessels. No vegetation, except creeping, thorny plants, is found on its summit. The island consists of limestone, containing traces of iron, magnesia, and aluminium. The entire limestone mass is honeycombed with

caves, with numerous openings on the face of the cliffs, the interior being filled with stalactites and stalagmites. These caves contain the phosphate, probably due to the accumulated droppings of sea birds. It occurs in two forms, as a fine powder and in compact masses. The percentage of tribasic calcium phosphate in the guano varies between 59 and 63 per cent. In order to facilitate extraction, passages have been cut through the partitions between some of the caves, so as to enable the material to be passed out through a single opening. In 22 caves explored by Davoine in 1887, 460,000 tons of guano are said to be available.

Don Miguel de Porrata-Doria also holds the concession to work the phosphate deposits on the island of Caja de Muertos, 6 miles southeast of the port of Ponce. That island measures about 2 miles east and west and 1 mile north and south. The deposits consist of calcium phosphate in the state of powder and of phosphatic rock. Thus far only 460 tons have been exported, which were shipped to Hamburg in the bark *Paquita*; but 140,000 tons are said to be available.

To guarantee the quality of fertilizers, the legislative assembly of Porto Rico in 1905 passed an act to regulate the registration and inspection of commercial fertilizers and chemicals in Porto Rico. This law makes it a misdemeanor to sell or offer for sale in this island any fertilizer or fertilizer material which does not conform to the formula given on the tag attached to the package.

LAW FOR PROTECTION OF PLANTS.

Another important law was passed by the legislature in the same year to prevent the importation of plant diseases or of insects harmful to plants. This law provides that no shipments by which such pests might be carried, in particular no coffee tree or part thereof, no citrus plant or cutting, and no cotton seed or cotton lint, shall be brought into the island without having attached thereto a certificate by an official entomologist stating that the articles are free from disease. In the case of cotton, the certificate must state, moreover, that the shipment originated in a locality where the boll weevil did not exist.

AGRICULTURAL EXPERIMENT STATION.

Much of the recent progress of agriculture is due to the agricultural experiment station maintained by the United States Department of Agriculture at Mayaguez. It comprises 235 acres, located immediately north of the city. Possession was given in June and the station was removed from Rio Piedras to the new site in September, 1902. In addition, arrangements were made with the "La Carmelita" coffee estate near Ponce, situated at an altitude of 1,500 feet, for experiments in coffee culture, under the direction of Mr. J. W. Van Leenhoff, the manager of that plantation. The experiments at the latter place consist in (1) the introduction of new varieties of coffee, (2) the selection of varieties of desirable qualities for the market of the United States and distribution and reproduction of the same, and (3) the improvement of Porto Rican coffee by different methods of cultivation and by cross-breeding with other desirable varieties. By June 30, 1905, 2,269 Porto Rican trees had been planted. At Mayaguez station itself, similar experiments are being made, including distance in planting, method of planting, density of shade, and use of fertilizers. Citrus fruits, cacao, and rubber trees have been planted. Several tons of the best seed of sea-island cotton, received from the United States Department of Agriculture, have been distributed, and experiments in the growing of sea-island and Egyptian cotton are in progress. Hard-wood trees have been planted. As there are many fiber plants growing wild on the island, experiments are being made with a machine for extracting the fiber. Considerable attention has been devoted to pineapples, of which 26 varieties are grown at the station. A division of animal industry has been added. Circulars and bulletins, printed both in English and in Spanish, dealing with the cultivation of different crops and control of insect pests, are sent to all making application therefor.

FORESTS.

The forest conditions of Porto Rico have been studied by Mr. R. T. Hill, from whose report (United States Department of Agriculture, Division of Forestry, Bulletin No. 25) most of the following data were taken.

The island, although wooded in the sense that it is still dotted by many beautiful trees, is largely deforested from a commercial point of view. At the time of its discovery it was doubtless covered by forests of many species of trees, but these forests can hardly be said to exist at present, except in the summit portion of El Yunque, in the Sierra Luquillo, near the northeast corner, where there are about 8 square miles of virgin forest. A few insignificant patches of culled forest also occur in the central and northwestern portions of the island. With a population of a million living on 3,435 square miles, or 277 to the square mile, the existence of extensive forests is practically impossible under present conditions of agriculture. There can be no doubt, however, that certain less productive areas, now largely lying idle, could be devoted to forest culture with decided benefit to the entire population.

So far as now understood, the island presents two strongly marked and contrasting zones of vegetation. One includes the whole of the mountains and north coast region and the other is the foothill country of the south coast. The first is a region of great and constant humidity, high altitudes, and stiff clay soils; the other a region of dry calcareous soils, seasonal aridity, and low altitude. The transition between these vegetal zones is very abrupt. It is true that the rainfall is less on the south, but there is also an immense difference in the capacity of the two geologic soils for retaining moisture and for root penetration, the clay soils being always saturated, while the limestone soils are porous and dry.

There is a milder temperature and a greater constancy of moisture on the highlands than in the lowlands, while on the latter there are occasional periods of drought. Accordingly, the mountains are constantly clad with fresh verdure, consisting of cultivated trees and of such remnants of the primitive flora as have escaped destruction by man, while the flora of the border region has at times a dry and yellow aspect.

The general growth of the mountain region consists of deciduous trees of many species, freely intermingled with shrub and grass, and, above 1,000 feet, with tree ferns. In some places the undergrowth is made up largely of ferns of numerous species, many of which are so tall and dense of growth as to constitute a veritable jungle.

Much of the mountain landscape is now occupied by cultivated crops of coffee, tobacco, fruit trees, shrubs, etc., broken by pastures of Para and Guinea grass, which constitute the staple forage of the island. There are many large cultivated shrubs and bushes, attaining the size of a peach tree, which give an aspect of primeval wildness to lands which are really the most highly cultivated. It is often difficult to convince a stranger that he is in a coffee plantation and not in a jungle, until a tree can be found full of the bright red berries which distinguish the coffee plant. The trees used for shade in coffee plantations are for the most part not native grown but have been purposely planted. Those most generally used for this purpose are the guava, bucare, guama, and maga. They grow so rapidly that by the time the coffee bush reaches maturity, at the end of seven years, they are tall forest trees, giving a dense shade.

The foothill country of the south coast was also at one time covered with dense forests, but is now even more thoroughly deforested than the mountains. Though a few species of trees are common to the two regions, the contrast between the flora of the mountains and that of the foothills is marked. The latter is largely of a low, shrubby, thorny, leguminous, acacia-like type, with compound leaves and thorny trunks or stems covered by *Tillandsia* (Spanish moss), and largely of the type of growth known in the United States as chaparral. In the dry season this flora produces a brownish landscape, as distinguished from the evergreen of the mountain region.

The limestone summits of the hills west of Yauco are covered by a remarkable growth of chaparral, including tree cactus, among which are organ-pipe forms resembling those of the California deserts and the tree opuntias of Mexico, accompanied by thorny brush, the whole draped by the epiphytic moss (*Tillandsia*).

USEFUL TREES.

The following Porto Rican trees are used by man:

For timber and fuel.—Algarrobo (pata de caba), ausubo, capa blanca, capa prieta, laurel sabino, laurel blanco, guayacan, ucar (ucare or jucare), espejuelo, moca, maricao, mauricio, ortegon, tachuelo, cedro, cojoba, aceitillo, guaraguao, maga, yaiti, palo santo, tortuguillo, zerrezuela, guayarote, higuiereta, tabanuco, mora, hueso, hachuelo, "ileucedran."

For cordage.—Mahagua, a tall malvaceous bush.

For dyeing and tanning.—Moca, brasilete, achiote, granadillo, maricao, dividivi, mora, gengibrillo, camasey, vijao, mangle.

Resinous trees.—Tabanuco, pajuil, algarrobo, mamey, masa, cupey, maria, guayaco.

Forest trees yielding fruits.—Pina, nispero (medlar tree), mango, guanabana, cocotero, aguacate, naranjo, jacana, mamey.

Fifteen specimens of Porto Rican woods were examined in the United States Bureau of Forestry. Nine of them—namely, mora, guayacan, hueso, ausubo, ucar negro, pata de caba, ucar blanca, hachuelo, and algarrobo—were found to be very hard, close grained, and heavy, varying from 60 to 76.8 pounds per cubic foot. The wood fibers are strongly interlaced ("crossgrained"), giving a "tough," uncleavable character to the wood. Mora, guayacan, hueso, and ucar blanca show a tendency to check and warp in seasoning, while the others maintain good form in drying out. The tendency to warp in the former, however, does not appear to impair their usefulness for certain purposes. All are capable of high polish and require but little "filling."

Ausubo, ucar negro, pata de caba, hachuelo, and algarrobo are eminently cabinet woods of great value and attractiveness, while mora and ucar blanca are less attractive for this purpose, but may have limited use. Guayacan and ausubo are especially adapted for small turnery, tool handles, etc., where great hardness and wearing qualities are needed. Pata de caba and algarrobo closely resemble the rosewoods of commerce. With a permanent black stain, ucar negro and hachuelo are useful substitutes for ebony. Ausubo is similar in appearance and a good substitute for the valuable "coccobola" (cocoloba), so much imitated by inferior woods.

The remainder of the 15 specimens, namely, laurel sabino, cedro, capa blanca, capa prieta, guaraguao, and maga, are characteristically lighter, softer, and coarser grained than the 9 species above mentioned. All, however, with the exception of laurel sabino, are attractive in grain and suitable for finishing woods.

Guayacan resembles *Guajacum officinale*, and is probably *G. sanctum*. It is exceedingly hard, brittle, and difficult to cut. It grows in comparative abundance in the entire mountain chain and on the southern coast of the island, producing a wood which is very solid and resistant. On this account it is much sought after in the shipyards for blocks and pulleys, for spokes and tires, and many other things which require great strength.

Ausubo is the chief and most used timber on the island, being noted for its great durability. It somewhat resembles a fine-grained teak. It is used in the making of wagon spokes, which are turned out by machinery in Ponce. It is close grained and beautiful in color, and should be utilized for veneering; it would make most excellent furniture.

Pata de caba and algarrobo are either the same or closely related species. The color of their wood is a rich blackish brown, irregularly mottled, and streaked with areas of pale reddish brown; sapwood light brown. Wood fibers strongly interlaced, giving smoothed surface a "curled" appearance. Very attractive cabinet woods. Resemble forms of mesquite, especially *Prosopis odorata*.

Maga is a wood of rich chocolate-brown color. Quarter and radially cut medullary rays have a satiny appearance. The rich color

and attractive grain of this wood should make it valuable for cabinet-work.

The four best timber trees of Porto Rico are the tabanuco, laurel sabino, ausubo, and guaraguao. Of these the ausubo is the scarcest and most liable to early exhaustion, its natural reproduction being only fair. Next in order is laurel sabino, not so scarce, and reproducing itself wherever possible. Guaraguao comes next, in considerable abundance, with fairly good reproduction; and, finally, tabanuco, which is plentiful and reproduces freely. The last named is one of the finest, if not the finest, tree for logging to be found in Porto Rico, owing to the straightness of its bole, freedom from lower limbs, and gradual taper. Trees 5 feet in diameter, rising to a height of 50 feet without a limb, are not uncommon. The wood is not durable if exposed to the weather, but is used for floor boards, ceiling, etc. A lumber dealer in New York places it in the same class commercially with yellow poplar, but its grain is much handsomer and it admits of a much finer polish. The fact that it grows well in close, pure stand is a great advantage from a lumbering standpoint. In many parts of the island it would not be difficult to create within a short time large areas of pure tabanuco. In addition to timber, this tree yields an immense quantity of gum, extensively used by the natives for candles and torches. If a profitable use could be found for this gum, enormous quantities could be easily and cheaply collected.

Palms are perhaps the most useful of trees to the Porto Rican native, as they furnish food, clothing, shelter, and utensils. The palm leaves are largely used for roofing purposes and for the sides of houses.

The moriche palm (*Cocos mauritia*) grows in damp, marshy soil from sea level to an altitude of 900 feet. Its fruit is used for food, both ripe and unripe, the leaves for thatch, the pith of the upper portion is used for making bread, and the sweet juice extracted from the upper portion of the trunk makes a pleasant drink.

The yagua or cabbage palm has a flexible and very durable bark, used to cover houses and to make partitions; also for boxes to store clothing or to transport rice and coffee.

The royal palm, the coyure palm, and the corozo palm furnish fruit which is largely used for fattening swine.

The cocoa palm is found in great numbers on the plains and coasts and is a profitable plant for cultivation. The external sheath of the cocoanut consists of fibers used for cordage and for calking vessels. A fine oil is made from the meat of the cocoanut, which is used for lighting and cooking. The trunks of the trees furnish the best palm boards for houses.

Hardly less useful than the palms is the bamboo, which may be seen growing everywhere. Its stem is used for fence posts, telegraph poles, and in the construction of houses. The individual joints are also used for utensils and flowerpots.

The principal use of woods on the island at present is in the construction of the heavy two-wheeled ox carts, which, next to pack animals, are the most general means of transportation. These carts have large wheels with massive hubs, spokes, and felines, and are tired with iron. These wheels, the wood for which costs \$20 per pair, have almost the rigidity and durability of iron, and upon any roads not as bad as those of Porto Rico would be practically indestructible. The hubs are made of guayacan, the spokes of ausubo, and the felines of mora. They are made by hand in every city and village, and the principal stocks of lumber are those stored for their manufacture. In view of the rapid extension of macadamized roads over the island, it is probable that these carts will soon be a thing of the past, and the beautiful woods now used in their construction may be devoted to uses in which their fine qualities will be more appreciated.

CONDITIONS FOR REFORESTING.

Porto Rico presents an interesting field for the practice of economic forestry. The climate, geologic structure, and soils are all well adapted to the growth of trees, and the forest question on this island is that of reforesting a deforested region. Many bare moun-

tain slopes and summits which have been abandoned as agricultural land could be quickly reforested in this land of rapid growth. This would be profitable even for fuel, considering the high prices of that article on the island. The rough limestone hills of the south coast are well adapted to the cultivation of logwood and fustic, which have been introduced into so many of the West Indian islands and now practically run wild.

A fair start toward a better administration of the timber resources of the island has been made in the establishment of the Luquillo Forest Reserve by Presidential proclamation of January 17, 1903. The reserve embraces about 65,950 acres, of which possibly 30 per cent is government land, unclaimed by private owners. The amount of Federal forest land is estimated at 20,000 acres. The forest area extends considerably beyond the limits of the reserve, and it is proposed to have the additional tracts of forest eventually included in the reserve. The central portion of the reserve is so rugged and mountainous that it is reported to be a practically unexplored, virgin, tropical wilderness. It includes the highest peak on the island, called El Yunque (the anvil), whose height is probably not more than 3,300 feet, though it has been reported to be as high as 4,987 feet. The Luquillo range, of which that peak is the culminating point, is the wettest spot on the island. In 1902 the rainfall at La Perla, the only meteorologic station within the reserve, was 140.75 inches. On the top of El Yunque, twelve hours without rain is an exception, and there the annual record would doubtless be much higher. Even at La Perla, 500 feet above sea level, there are few nights in the year when no rain falls.

With such an abundance of moisture, and a mean annual temperature of 77.8° F., the Luquillo reserve presents ideal conditions for luxuriant forest growth. To these must be added the abundance of water power in the multitude of streams of high grade and large volume, presenting singularly advantageous conditions for the commercial utilization of forest products. One drawback is the constant trade wind, which stunts and distorts the trees in exposed situations, so that above 2,000 feet such places are covered by little more than brush. In sheltered localities and at lower altitudes, however, the constant heat and the abundant moisture produce their natural effect of a forest vegetation of tropical luxuriance. It is safe to say that, as soon as means of transportation have been provided in good macadamized roads, the Luquillo Forest Reserve will amply repay its cost of maintenance, while at the same time affording to several cities near by the boon of an abundant water supply of crystal purity, unpolluted by the sources of contamination which turn so many other Porto Rican streams into carriers of disease.

The natural outlet for the reserve, when land transportation shall have been provided for, will probably be the harbor of Bahía Honda, south of Fajardo and near the village of Ceiba, one of the finest harbors in Porto Rico, though at present wholly undeveloped. It is landlocked, deep and safe, and only half as far from the center of the forest area as San Juan.

FISHERIES.

The fisheries of Porto Rico were made the subject of a careful study by the United States Commission of Fish and Fisheries (now Bureau of Fisheries), a party in charge of Prof. B. W. Evermann being sent to the island in December, 1898, and remaining there till the latter part of February, 1899. The results were published in 1900.

The status of the marine fisheries of Porto Rico is determined by one salient fact—the island has hardly any shallow water on its coasts. Practically all the world's fisheries are confined to depths less than 600 feet. The great fishing grounds, such as the Dogger Bank in the North Sea and the Banks of Newfoundland, are in very shallow water. In Porto Rico the 600-foot line lies close to the shore, particularly on the north and south sides. On the north a depth of 3,000 fathoms is soon found, and a little farther out, less than 100 miles offshore, is the "Brownson Deep," one of the deepest

holes on the globe, where soundings of 4,561 fathoms have been taken. On the east and west ends the narrow shelf fringing the island stretches across to Haiti and to the islands to the east, but even there the depth is considerable, 700 fathoms having been found on the east and 660 fathoms in Mona Passage on the west. Moreover there are scarcely any banks or shoals. Probably the only ones are in Mona Passage, and these are of uncertain depth and location. With the exception of San Juan, Guanica, and Jobos harbors on Porto Rico, and Ensenada Honda off Culebra Island, the entire coast is exposed, not only to frequent storms but to the strength of the trade winds, and for a part at least of every year, or even of every day, there is a heavy surf which beats against the rocky shores or swashes back and forth incessantly on the sandy beaches, holding detached objects—rocks, sticks, or animals—at its mercy.

As a result, brackish-water, free-swimming, shallow-water, and surface-swimming fishes are notably absent, while there are many blennies and gobies living in, under, or among the rocks and in the reefs; gobies, chaetodonts, and the like, in the tide pools or in holes in the rocks along the shore, and scaroids and blennies among the algae. Among free-swimming fishes as a rule only those species are well represented which live at sufficient depths to prevent their being seriously disturbed by the constant swashing along the shore. Among mollusks, there is a great preponderance of those species which, such as gastropods, can cling to rocks, or which either burrow into rocks or live among their interstices. Bivalve shells are rare, excepting those which either live in or burrow in the coral rocks or sand. Starfishes and sea urchins, except those species which live in or under rocks or among the branching corals, are very rare, and such other animals as lie exposed on the bottom, or which have no special means of maintaining their position, are poorly represented or entirely absent. In short, all the shore species, not only of fishes but of all other groups, are those which have been able to maintain themselves either by holding to something, by burrowing or crawling into the rocks, by living in protected nooks and corners along the shore, by living in patches of algae, by burrowing in the sand, or by darting into protected places when the surf becomes too strong.

The peculiar physical conditions just described also account for the scarcity of marine mammals and reptiles, and for the apparent absence of commercial sponges. The only marine mammal known from Porto Rico is the manatee, and it is of very rare occurrence, owing, no doubt, to the absence of broad sluggish rivers in which it finds its favorite environment. Turtles are also uncommon. The species represented are said to be the hawksbill and green turtle, which are rare, except at the east end. The scarcity of turtles is doubtless due to the absence of large areas of shallow water with sandy bottom. So far as known, there is no species of alligator, crocodile, or seal about this island.

What has been said of salt-water fish applies in large measure to fresh-water fish, though of course for a different reason. The elevation of most of the island being considerable, and the rainfall in some parts considerably in excess of 100 inches a year, it follows that most of the rivers are torrential. Swift, turbulent streams at all times, they become veritable torrents during heavy rains, carrying everything caught in the current far out to sea. Fish living in these streams, in order to escape being swept out into an adverse environment in the sea, have acquired the habit of burrowing or going into holes in the banks, where they are comparatively safe, even during the greatest of floods. In Bayamon River, for example, the seine was hauled downstream in the usual way, but scarcely anything was caught. It was thought that the fish might be hiding in the holes under the banks, and accordingly the seine was stretched lengthwise of the stream a few feet from the bank, then pulled up against the bank. The holes under the bank were then prodded with sticks to scare out the fish, and the seine on being lifted was thereupon found well filled with moron, guavina, ciaga, dajao, anguilla, camaron, etc. The same observation was made at Caguas in the Rio Caguitas and in the Rio Loiza.

METHODS OF THE FISHERIES.

The majority of the boats used in fishing are flat bottomed, though some have keels. Some are of schooner, sloop, and cat rig, and there are some skiffs and dories with sails. The lateen sail is in general use. Only at Mayaguez and Puerto Real did any of the boats have live wells in which to keep the fish. The fishing tackle consists of pots or traps, haul seines, gill nets, cast nets, and hand lines.

The fish pots or traps, or basket traps, are of simple construction and are worth from \$4 to \$10. The frame is of mangrove or other wood and the body of split wild cane, wood, or bark, woven in 2-inch, 6-sided meshes, all fastened together with calabash roots, which are very strong, and, when water-soaked, very pliable. The mouth of the pot is on the side with the reentrant angle, the entrance narrowing as it passes with a curve into the pot; a small door in the back permits the removal of the catch. The largest pots are 6 feet long, 3 feet wide, and 18 inches deep, while others are only about half as large. Bait is not commonly used. The pots are set at depths varying from 3 or 4 to 30 or 40 fathoms, with stones or other weights to anchor them, the location being marked by one or more buoys.

Cast nets are in common use in many places. They are funnel-shaped, the large end being 6 to 10 feet wide, tapering off through its 6 to 8 feet of depth to a point to which a line is attached; the netting is 1-inch-stretch mesh, with the bottom loaded. If properly thrown, they spread wide open before striking the water, and in this position sink to the bottom, after which they are immediately drawn in and the catch removed. The value of a cast net is \$3 to \$5. They are used along the shore in the surf for sardines and in the river mouths for mullets.

Hoop nets are used to some extent in the river mouths. They are funnel-shaped, 6 feet in depth, of 1-inch-stretch mesh, and the mouth is stretched on a 6 by 4 foot hoop of poma rosa wood. They were seen only in the Bayamon River, where they are used at holes or indentations in the banks, against which they are placed and the fish frightened into the net.

Fish weirs or traps are used in the Bayamon River by building a hedge of canes across the stream, with a gateway for passing boats. The hedge is made with pockets at various places on each side, and the fish, in going up or down stream, enter these pockets and are removed with dip nets. In some streams the hedges have no pockets, but funnels of bamboo or cane splints are inserted at various places. Fish seeking a passage through the hedge enter these cones and become wedged, few escaping.

Trawl lines are used to some extent, chiefly at Aguadilla and Mayaguez, generally where the water is several fathoms deep, and 3 to 10 miles offshore. Each trawl has from 75 to 200 hooks fastened singly to snoods 3 feet long and placed 6 feet apart. The trawls are baited with sardines and anchored. For deep-water fishing, from 3 to 4 miles offshore, in water from 60 to 500 feet deep, the bow rig is employed, chiefly at Aguadilla and Arecibo. This is simply a bow of strong wire, at each end of which is attached a short line, having from 1 to 6 hooks; its value is about \$3. The principal species taken with this apparatus is said to be the "cabrilla" or "red-hind." Trolling lines are used to some extent, chiefly at San Juan, Aguadilla, and Mayaguez. Each line has a single hook, baited with sardines, and fish of large size are usually taken.

The food fishes of the island are numerous as to species, but only fairly abundant as to individuals. The absence of extensive shoals or banks about the island, the comparatively limited area of shallow water about the river mouths, and the fewness and small size of the bays, are evidence that there can not be suitable feeding grounds to support large numbers of commercial fishes.

FISH INDUSTRY.

Fishing for a livelihood is not carried on to a large extent anywhere in Porto Rico, and scarcely at all for sport. A few fishermen

at the several ports make a living by fishing, plantation work, and labor at the docks on ship cargoes. The professional and semiprofessional fishermen are estimated to number nearly 800, who employ about 350 sail and row boats. The census of 1899 returned only 455 fishermen, for the reason, no doubt, that many persons practice fishing only at irregular intervals.

In the past the best of the fishing was monopolized by a few persons who bought the exclusive right to fish at the most favorable localities. Rights were advertised and sold at auction by the public authorities, who at some ports imposed a special tax on all fresh fish landed. All fisheries were in charge of the captain of the port, and anyone wishing to engage in the business had to procure a license and be enrolled in the reserve naval force, licenses being granted only to subjects of Spain. Boats were numbered and a record kept of licenses, men, apparatus, and, to some extent, of the products. Upon the American occupation this system of granting exclusive fishing privileges was abolished by official order.

The local fisheries may prove to be of considerable value, but time and capital will be needed to develop them. The number of species of good food fishes is great, and many important species are fairly abundant, yet little attention is given to their capture. As a rule, the local markets are indifferently supplied with fresh fish, usually at high prices. Only the few large fish are dressed; none are canned, and none are cured, except when a large catch is made, a few being then poorly cured for the home use of the fishermen. The species best adapted for curing or canning are yet to be ascertained.

Cheap ice and quick transportation are two important factors in the fresh-fish business, and at present both are lacking. Ice is to be procured at very few places, and the price, \$12 to \$15 a ton, is too high. The few short lines of railway have no express business, and no fresh fish are transported by rail. With few exceptions the common roads are so poor that merchandise has to be carried by pack animals. Only persons living near the sea or rivers ever have fresh fish. The few nets now used are handmade by the fishermen, who are seldom able to buy more than a few balls of twine at a time.

In supplying the island with the large amount of cured fish required annually, there will be many changes, one being the discontinuance of the long-time credit system. To secure return cargoes, the shipper must be familiar with the sugar and coffee industries. The Porto Ricans are quick to appreciate low prices, and when they learn the good qualities of boneless fish, canned fish, and similar foods prepared in the United States a large demand for these articles may be expected.

In 1897 the total imports of fishery products into Porto Rico amounted to 35 pounds per inhabitant. The value of imported fishery products for the last six years was as follows:

IMPORTS OF FISHERY PRODUCTS INTO PORTO RICO, 1901 TO 1906.

WHENCE IMPORTED.	1901	1902	1903	1904	1905	1906
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
United States.....	251,758	395,444	196,370	154,106	400,731	514,902
Other countries.....	270,112	397,965	472,601	363,155	467,854	514,733
Total.....	521,870	793,409	668,971	517,261	868,585	1,029,635

The climate of Porto Rico, with its months of warm, damp weather, and much rain, is very trying on dry fish. If not properly cured, they will soon turn red or become soft and otherwise unmarketable. Fish from the United States would probably have to be cured harder than is customary for home or northern demand. They should be well but not too heavily salted and well dried. December, January, February, and March are the best months for keeping fish in good condition in Porto Rico. The largest demand is in January, February, March, and April. If canned fish could be furnished at a low price, their sale would no doubt largely increase as their good qualities became more fully understood.

MINERAL RESOURCES.

The mineral resources of Porto Rico were made the subject of an inquiry by William F. Willoughby, agent of the United States Census Bureau (now treasurer of Porto Rico), whose report appeared as Census Bulletin No. 6. He summarizes his results as follows:

That Porto Rico possesses mineral resources that will be of great value to the island in future years there can be no doubt. In their utilization the stage as yet has only been reached where efforts are being made to determine more exactly their character and extent. Authorization for water rights and concessions of various characters are being constantly sought of the insular government, and it is certain that when another investigation along the lines of the present one is made the phase of industrial exploitation in respect to a number of minerals will have been definitely entered upon.

At present the old Spanish mining law is still in force, but a new mining law is being drafted and will be submitted to the legislature. Pending legislation relating to the public lands (*terrenos baldios*), no mining claims are being allowed on public property.

GOLD, SILVER, AND NICKEL.

Numerous mining claims, both for precious and for base metals, have been filed since the American occupation, but with the exception of a little placer gold mining none are worked. The placer gold mining is confined to the Corozal district, situated some 25 miles southwest of the city of San Juan. There are some twenty or more miners of the peon class steadily engaged in the work of extracting gold from the sands of the river by means of an oscillating movement of the hands applied to a wooden disk in which the sands are washed. From the best information obtainable the value of the gold thus secured daily will aggregate, approximately, \$25. An American, who is the concessionaire of eleven mining claims in the Corozal district, is preparing to operate on an extensive scale by means of a hydraulic plant. He is an experienced miner, who has invested a considerable sum of money in exploration, surveys, and assays in Porto Rico, and is said to be favorably impressed with the mineral wealth of the Corozal district. The executive council of Porto Rico granted to him, March 29, 1905, a franchise authorizing him to divert the waters of the Mabilie River from their natural course with a view to obtaining the deposits of gold in the river bed. He claims to have discovered the original veins from which the deposits in the river bed are derived. No mining for gold is at present carried on in any other part of the island, although there is evidence that placer mining was practiced elsewhere, particularly in the vicinity of San German, about 10 miles southeast of Mayaguez on the west side of the island. Twenty precious-metal mining claims have been registered on the books of the bureau of mines, but none are yet operated. All except two are for gold. Sixteen are located in the Corozal district and one each in the Guayanilla, Toa Alta, Luquillo, and Naguabo districts. The last mentioned is for silver and nickel and one of the Corozal claims is for "silver and other." With the exception of two Porto Ricans, all these claims were registered by Americans.

From El Yunque, the highest mountain on the island, situated near the northeast extremity, and from adjoining mountains, numerous rivers flow down, which are known to be gold-bearing. The Mameyes, one of the richest in gold, has as tributaries the rivulets known as Filipina, Cajones, Guaraguao, La Mina, La Maquina, Tabanuco, and Anon. In the last named some thirty-eight years ago some work was done in the washing of sands or auriferous alluvia, with an output of from 1 to 2 pounds of fine gold per day. The rocks more abundantly found in the watershed of Mameyes River are eprite and porphyry, crossed with veins of quartz and iron pyrites. The alluvial lands occupy a good extension in the middle and lower parts of these watersheds, and are composed of clay, sand, and boulders, forming deposits of analogous nature. Their depth is variable. In the valley of the Anon there are some cuts, from 20 to 26 feet deep, made in such alluvial deposits with the view of exploiting the auriferous strata.

The valleys of Corozal, Negros, Congos, Cibuco, Mavilla, and Manati rivers are known to contain auriferous sands. Corozal Valley seems to have been carved by erosion from the calcareous soil, said to be of Tertiary formation. On the left shore, and in the bed of the river, the limestone has disappeared, being replaced by heavy layers of sandstone, on which rest the auriferous Quaternary alluvia. The alluvial deposits increase in thickness with increase of depth, and gold is found very near the surface in the higher and hilly parts, while in the great deposits in the lower parts of the valley the auriferous strata are covered by barren masses. Near the source of the Congos River, in its bed, and some 10 inches deep, pieces of quartz have been found containing 120 to 150 grains of pure gold. In the Corozal district some washing machinery was established, and the result was from \$2.17 to \$4.30 for each ton of sand.

There are also gold placers in Mayaguez, San German, Yauco, and Coamo. The gold is found in nuggets of \$2 to \$3 value, rarely larger. In Fajardo River a piece was found which weighed 4 ounces, and in the Congos River a piece which weighed 1 pound. The largest piece, found in the Corozal district, was sold for \$200 in money besides certain valuables. In the bed of Filipina Rivulet there were obtained from 132 pounds of sand 9 grains of pure gold, which makes 154 grains per ton of sand. The placer miners use an instrument called "gaveta," made of wood, shaped like a plate, 16 inches in diameter and 5 inches deep. On Mameyes and Corozal rivers, peasants are seen washing the sand, from which they get enough gold to make a living.

Spanish records mention silver deposits in the northwestern corner of the island, in the mountains of Añasco and in the barrio of Llamas, Isabela district. The Spanish Government granted silver mine claims in Naguabo, Corozal, Rio Grande, Fajardo, Lajas, and Las Piedras.

IRON, COPPER, AND LEAD.

Forty-seven claims have been registered for the baser metals, of which 32 are for iron, 11 for copper, 1 for iron and copper, 2 for lead, and 1 for pyrolusite, a manganese ore. None of these were in active operation in 1902, and only two were reported as carrying on exploration and assay. Practically all the iron mines are located in the two departments of Guayama and Humacao, at the eastern end of the island, while most of the copper mines are located near the western end, in the departments of Mayaguez, Arecibo, and Ponce, though the most important are close to the eastern seaboard. One claim was estimated to contain at least 4,000,000 tons of iron ore.

The minerals of copper are bornite, native copper, green and blue carbonates, yellow copper sulphide, often accompanied by iron pyrites, and iron oxides. The copper outcrops are scattered all along the mountain range that crosses the island from east to west, the richest being in the barrio of Rio Blanco, district of Naguabo. Copper mining began in 1869. In the mine called "La Abundancia," some small excavations were made and the superficial carbonate was taken out, and many tons of rich ore were thus obtained. Similar results were obtained in the Santa Amalia, La Castellana, and Santa Teresa mines, all located in the barrio of Rio Blanco. In the last-named mine, copper indications were noted from the surface to a depth of 82 feet, first as green carbonate with 23 per cent of copper, then as ferriferous bornite, and in some parts very pure yellow sulphide. In 1879 10 tons of copper sulphide were obtained from the Santa Teresa mine, and 60 tons of copper carbonate from the Santa Amalia. Cost of transportation finally caused the abandonment of the industry. Lately some development work has been done in the same region. The ore is said to be a pyrrhotite vein, 6 to 10 feet thick, of which 8 to 15 inches are well mineralized by one of the copper sulphides, the ore averaging 10 to 12 per cent copper.

By far the best surface indications of iron ore are at the eastern end of the island, stretching out some 10 miles in an east-west direction, the town of Juncos being near the western end. Considerable prospecting has lately been done by an American company on

these claims. Drifts some 2,000 feet in length in the aggregate, together with many open cuts, holes, and trenches, succeeded in developing ore in quantities large enough to have economic value, were it more advantageously situated with respect to shipment to the United States. The ore is hematite and magnetite and will average close to 60 per cent of iron. It is also low in phosphorus and in sulphur. The other iron ore indications, such as those of Ponce, Utuado, and Humacao, do not seem to be tempting enough to invite exploration work.

Good samples of galena, a lead ore, have been found in Arroyo, Mayaguez, and Naranjito. The Spanish Government granted two claims in Guayama, one for lead and the other for argentiferous galena. Other minerals mentioned are bismuth, in Ponce; platinum, tin, and mercury in Corozal; quartz crystals in the Rio Prieto; agate of good quality on Caja de Muertos Island; malachite on Rio Blanco; molybdena, magnetic pyrite, manganite, limonite, chrysocola, epidote, and garnet.

SALT.

The production of salt in Porto Rico is confined to the southern coast. The process of solar evaporation is the only one employed, and that in its most primitive form. The consumption of this article, estimated from the best data obtainable, is about 15,000 tons per year. All the salt required for home consumption, as well as a large amount for export, could be produced on the island, but owing to insufficient capital (as alleged by the producers), lack of skill, or unfavorable weather, and despite the duty of 12 cents per hundred pounds on foreign salt, thousands of tons of salt are annually imported from Curaçao. The Curaçao salt is sold in Porto Rico at 20 to 50 cents per quintal (from 10 to 25 cents per 100 pounds), whereas it is claimed that with proper management salt can be produced in Porto Rico at a maximum cost of 10 cents per quintal (5 cents per 100 pounds). In 1902 the value of the product of the four salt works reporting, two in Mayaguez, one in Ponce, and one in Guayama, was only \$2,590. It was stated that this small amount was due to the heavy rains during that year, the amount in other years having been six to ten times as much. The Fortuna salt deposit did not produce in 1902, the hurricane of 1899 having destroyed the plant. The Carmen and Montserrat deposits are said to have in former years produced 25,000 to 30,000 quintals (5½ million to 6¾ million pounds). One operator states that with an initial expenditure of \$5,000 he could produce 100,000 quintals (22 million pounds) of salt.

BRICK, LIME, AND PHOSPHATE.

Brickmaking is carried on all over the island, but is not engaged in continuously by any one establishment, kilns being baked from time to time, as the demand arises. An inquiry in 1902 showed that 45 kilns produced about 4 million bricks, valued at \$26,000. This makes the average price \$6.75 per thousand. However, it is thought that this represents hardly one-third of the total, since many operators were not reached at all. With the exception of an ox-power wheel for mixing clay, none but hand power is used. The clay is mixed with water in a wooden trough, the mass is then molded by hand in a wooden mold, the bricks thus made are placed in stacks under a shed to dry, then baked in a brick kiln. The product is not nearly so durable as that manufactured in the United States by modern machinery. Clay roofing tiles were extensively manufactured in Porto Rico at one time, but cheap iron roofing has driven them out of use.

The entire island is practically one vast limestone deposit. This enables the production of lime for industrial uses to be carried on almost everywhere, and on a small scale. Owners of quarries near points where limestone or its products are needed can find a market for it at 3 to 10 cents per cubic meter (10.76 cubic feet), the purchaser attending to the work of quarrying and delivery. Transportation is the main item of expense. Whenever the demand is

such as to make the production of an oven of lime sufficiently lucrative, the farmer will prepare one and take it to the nearest market. Thus the production of lime in Porto Rico is important rather by reason of the large number of persons engaged therein on a small scale than on account of its commercial value. A certain amount of lime is used by the sugar factories to clarify sirup. Where the lime is not to be had on their own land, the sugar refiners usually obtain it from some neighboring deposit gratis.

The limestone formations may be divided into two classes—white and yellow. There are also deposits, few in number, of a blue limestone, somewhat resembling granite formation and much harder than either the white or the yellow variety.

There are four phosphate-rock mining claims registered in the office of the commissioner of the interior of Porto Rico—namely, the Fortuna, at Monte Grande, Cabo Rojo, Mayaguez; La Confianza, at Las Boquillas, Manati, Arecibo; the Trabajo, at Arenales Bajos, Isabela, Aguadilla, and the Joaquin and San José, of Ponce. None of them is at present in operation. Six unregistered phosphate deposits are known to exist—two in Coamo, two in Ponce, and one each in Manati and Isabela. The Palmarejo deposit in Coamo is said to have yielded, in 1902, 50 tons, of which 35 tons were sold for \$105. The insular government is the owner of the largest known deposit of phosphate rock, situated on the island of Caja de Muertos, close to Ponce. This deposit was formerly operated on an extensive scale and the product shipped to Germany. Operations have been resumed by Señor Don Miguel de Porrata-Doria. In earlier statistics deposits of bat guano have been confounded with phosphate rock, such guano being found on rocks or in caves of phosphatic character.

MINERAL SPRINGS.

There are four widely known mineral springs in Porto Rico, the waters of which possess medicinal properties of no mean value. They are the Maria, of Coamo; the Dolores, of Arroyo; the Florencio, of Caguas, and the Quintana, of Ponce. The first-named spring is famous locally as a health resort, there being a well-appointed hotel furnishing accommodations for 110 guests. The waters are supplied to visitors in the form of hot and cold baths and for drinking purposes, but have never been bottled, nor has any attempt been made to put them on the market. The springs run from a soft red sandstone, at an altitude of 196.85 feet above sea level, with a temperature at point of exit of 43° C. (109.4° F.). An analysis by Quintanilla in 1891 showed that among fixed elements calcium and sodium sulphates were far predominant, the other elements being nitrogen, oxygen, hydrogen sulphide, free carbonic acid, potassium chloride, sodium chloride, sodium silicate, sodium carbonate, and ferrous carbonate, together with traces of tannic, nitric, and boric acids and bromine and lithia. The Florencio springs are used only by the family of the proprietor and by others with special permission. The waters have never been analyzed or put on the market, but local physicians prescribe them for skin diseases and stomach troubles. The Quintana springs have an excellent local reputation, being administered in the form of baths. An analysis made in 1894 showed that the predominant element in the water was sodium chloride, besides which ozone, oxygen, carbonic acid, magnesium chloride, sodium sulphate, potassium sulphate, calcium sulphate, calcium carbonate, ferrous carbonate, silica, organic matter, and traces of manganese and bromine were present. The Arroyo springs are not operated and have not been analyzed.

MANUFACTURES.

Aside from the sugar and tobacco factories mentioned elsewhere, the manufacturing industry of Porto Rico is as yet insignificant, though vast water power and cheap labor promise a considerable development in the future.

Two fruit-canning establishments exist on the island, as the result of the development of pineapple culture. They are in operation

only during the season, which does not last over five months. In the Mayaguez establishment the laborers (not counting those engaged in specialized occupations) included, in 1905, 50 men, 6 boys, and 80 women and girls. The daily wages of the men ranged from 30 to 50 cents and averaged 44 cents, while the wages of the boys and women were uniformly 25 cents per day. Both the men and the women showed great rapidity and expertness in the operation, and the work was carried on quite as well as in an American establishment.

A recent development has been the manufacture of pineapple glacé, or candied pineapple. The manufacture of guava jelly is a rapidly growing side line, 10 tons of this material having been sold in New York during the last eight months, through the Porto Rico Commercial Agency, 91 Wall street. None but white sugar is used in its manufacture, while a good deal of this article from other sources is made with brown sugar. The bitter orange, growing almost wild in Porto Rico, and never before utilized in exports, is now beginning to yield a marketable article in the form of marmalade.

At San Juan there is a macaroni factory which works six days in the week and eight hours a day. Three-fourths of the employees are women, earning 40 cents a day.

Planing mills are in operation at San Juan, Mayaguez, and elsewhere. The lumber used is Georgia and Florida pine, no native woods being handled. There are some shoemaking establishments, in one of which, at Ponce, 14 shoemakers were employed, but no machinery is used, the work being done by the simplest tools. The same is true of dressmaking and tailoring. A cotton-ginning plant has been established at San Juan.

The manufacture of palm-leaf hats is spread all over the island, its principal center being Cabo Rojo. The palm leaf is split into fine strips which are braided together, the braid being then stitched together to form the hat. All the work is done by hand, mostly in the homes of the peasants, but there are also factories devoted to this industry—one at San Juan, belonging to Angel Suarez; and one at Ponce, belonging to J. Cabrera. These hats are light, pliable, attractive in color, being a light yellow, very durable, and have the great advantage that they can be washed.

The drawn work and embroidery made by Porto Rican women has long been admired for its beauty. It is produced in the homes of the people all over the island, but there is a factory devoted to this industry at San Juan which employs about 200 hands.

INLAND TRANSPORTATION.

The problems of transportation in Porto Rico are comparatively simple. As the island is only about 36 miles wide by about 100 in length there is not a point on it that is more than 18 miles from tide water, in a straight line. The distance to the nearest port is of course in many cases considerably greater. Thus the land transportation is of slight importance compared with the sea transportation in the commerce of Porto Rico.

Yet the land transportation has hitherto been the more difficult of the two problems. As stated elsewhere, nearly the entire surface of the island is mountainous, with only a narrow fringe of level land along the seashore. The soil is almost everywhere deep, and the rainfall, in the larger part of the island, abundant, even excessive. As a consequence, roads, unless built with the utmost care and of the most solid material, are quickly ruined by the action of running water till they become impassable for vehicles and hardly passable even for pack trains. Accordingly, when the Americans occupied the island, they found a few first-class roads and elsewhere hardly anything but bridle paths, on which mule trains or wagons drawn by oxen transported coffee, sugar, and tobacco from the interior to the ports. A trip from Maunabo on the southeast coast to Mayaguez on the west coast cost more than a trip to New York. The first-class roads were those from San Juan to Ponce with a branch from Cayey to Guayama, from Aguadilla to San Sebastian, and from the port of Ponce to Adjuntas. The San Juan-Ponce

military road is a marvel in its way, with culverts and bridges of solid masonry and everything constructed in the most solid fashion. It is stated to have cost from \$14,000 to \$25,000 per kilometer, or \$22,500 to \$40,200 per mile. The Cayey-Guayama road is nearly as good.

ROAD BUILDING.

The question of road building was taken up immediately on the American occupation, with the result that, whereas the Spaniards from 1859 to 1898 built 268 kilometers (167 miles), or 6.78 kilometers (4 miles) per year; the Americans from July, 1898, to the end of 1904, built 280.8 kilometers (174 miles), or 51.1 kilometers (32 miles) per year. Porto Rico has had an advantage over other countries in that its system of roads, instead of being allowed to grow up haphazard, was planned beforehand for the whole island by competent engineers, selecting the shortest routes and the easiest grades. The policy has been to build roads first and bridges afterwards, so that many first-class roads now cross rivers through fords, but some substantial bridges are built every year.

Most of the roads built since the American occupation are extensions of preexisting roads, but two important new roads have been built—that from Arecibo to Ponce and that from Caguas to Humacao Playa. A glance at the map at once shows the importance of the Arecibo-Ponce road, crossing the island a little to the west of its center, in a nearly straight line from north to south. The distance from Ponce to Adjuntas had been finished by the Spaniards; the rest is new. The last section was finished July 1, 1904, and the road has since been open to traffic throughout its length. It shortened the time of travel between San Juan and Ponce by at least three hours, until railway connection was established around the northwest corner of the island, when travel by rail from San Juan to Ponce afforded a further economy of time. The road is of first-class construction throughout and presents a panorama of magnificent scenery, rivaling the views of any of the famed roads of Europe. As its attractions become known, it will undoubtedly grow in favor with tourists.

The salutary effects of road extension are marked. From the finished roads, the broad-tread, high-wheel ox cart is slowly but surely disappearing, and the lighter, cleaner, and more scientific vehicle, the American wagon, is coming to the front. The saving in cost of transportation is estimated at from 50 to 70 per cent of the former figure, and in some instances it is much larger. From the town of Utuado, located in the center of an extensive coffee section, the regular charge for carrying 100 pounds of coffee by pack train to Arecibo, the seaport, over the old trail, was \$1. Now, over a well-built highway, through a country rivaling the most beautiful sections of Switzerland in scenic effects, a team of mules hitched to an American road wagon hauls a full load at 10 cents per 100 pounds. The cane growers in the Arecibo Valley, who formerly paid 10 cents per 100 pounds for hauling their sugar to the railway station, now pay only 3 or 4 cents per 100 pounds, and save thousands of dollars annually.

Porto Rico being practically one block of limestone covered with soil to a varying depth and with alluvium along the coast and in the valleys, road-making material is fairly abundant, so that in most parts the road can be constructed from the products of quarries near by. The average cost of maintaining a completed road has been steadily reduced until in 1905 it was \$292 per kilometer (\$470 per mile), and in 1906 it was further reduced to \$201.77 (\$325 per mile). It had been estimated that the cost could be reduced to \$190 per kilometer (\$306 per mile), but this hope was frustrated by the general rise in wages, owing to the demands of the sugar and tobacco industries. Almost a general increase of 5 cents per day was made in the wages of the laborers, but even this, at times, was not enough inducement to bring the laborers to road work, which was therefore carried on with a very limited force. The cost of transportation had also increased, amounting in many sections to as much as 50 per cent. For instance, carts from San Juan to Caguas, which in 1905 made the trip for \$8, were scarce in 1906 for \$14 per trip. To give

an idea of the cost of new roads, it may suffice to mention that the cost of building the 21 kilometers (13 miles) of road from Jayuya to Alto de la Bandera, with masonry culverts and bridges complete, was estimated at \$165,075 (\$7,861 per kilometer or \$12,697 per mile), whereas by building some of the culverts of wood, where masonry or cement were not absolutely needed, and by omitting certain bridges, the cost was reduced to about \$50,000. The wooden structures will, of course, be replaced by permanent ones as fast as they are needed or funds permit. All engineers agree that the "regular maintenance" is the least expensive, following the principle that a stitch in time saves nine, for it is easier to patch up small holes as soon as they make their appearance than to mend gulleys or mud holes after they are formed. However, even with constant care, it is not possible to protect the roads against damage by the heavy rains, especially since the exuberant vegetation tends to choke the ditches faster than they can be cleaned. To build "dirt roads" in Porto Rico would be a waste of money. The foundation of nearly all the roads is a loam, clay, or decomposed rock (tosca), which when wet turns into deep, sticky mud. Hence a road, in order to stay good, has to have macadam—that is, broken stone—for its bed. If neglected even for a short time, it quickly becomes impassable.

Hitherto new roads have been built largely with the "trust fund," namely, the duties collected on Porto Rican imports into the United States before the establishment of free trade, which were turned over to the insular government, amounting finally to about \$2,400,000. This money has been spent on roads and bridges and on schoolhouses until in 1904 there remained a balance of only about \$225,000. As the maintenance of the existing roads requires an expenditure of about \$180,000 a year, it is estimated that when all the roads now planned are completed the cost of maintenance will amount to nearly \$500,000. This means that the funds available for building new roads will be more and more difficult to procure. Impressed with this consideration, the insular government has for several years discussed the advisability of a loan for the purpose of completing the network of roads. A bill to that effect became law on February 13, 1907, and \$1,000,000 worth of bonds were sold in March. It is expected that the stimulus which these roads will give to industry will lead to such an increase in revenue as not only to pay the interest on the bonds but to redeem them before long.

LIST OF INSULAR (MACADAMIZED) ROADS IN PORTO RICO FINISHED ON JUNE 30, 1905.

[One kilometer=0.62137 mile.]

ROAD.	Kilo- meters.	Miles.	ROAD.	Kilo- meters.	Miles.
San Juan to Ponce....	135.0	83.9	Caguas to Humacao		
Ponce to Arecibo....	81.7	50.8	Playa.....	39.0	24.2
Camuy to Aguadilla....	42.3	26.3	Caguas to San Lo-		
Aguadilla to Lares....	37.8	23.5	renzo.....	8.0	5.0
Añasco to Mayaguez....	9.0	5.6	Caguas to Aguas		
Mayaguez to Las Ma-			Buenas.....	9.0	5.6
ritas.....	26.3	16.3	Rio Piedras to Nogu-		
Mayaguez to Yauco....	44.2	27.5	abo Playa.....	70.2	43.6
Consumo toward Mar-			Rio Piedras toward		
iceno.....	7.0	4.3	Trujillo Alto.....	3.5	2.2
Mayaguez-Yauco road,			Cataño toward Vega		
toward Cabo Rojo....	5.8	3.6	Alta.....	24.5	15.2
San German to Lajas....	4.0	2.5	Bayamon toward Co-		
Alto Bandera to Ja-			merio.....	18.3	11.4
yuya.....	19.0	11.8	Bayamon-Comerio		
Aibonito to Barran-			road toward Naran-		
quitas to Bar-	11.8	7.3	jito.....	4.0	2.5
ros.....	15.0	9.3	Reyes Catolicos Bridge		
Coamo to Coamo			to Corozal.....	16.0	9.9
Springs.....	5.0	3.1	Manati to Ciales.....	12.8	7.9
Ponce to Guayama....	56.0	34.8	Manati-Ciales road to		
Cayey to Arroyo....	33.0	20.5	Morovis.....	11.7	7.3
Arroyo to Patillas....	7.5	4.7	Naguabo to Naguabo		
Cidra to Las Cruces....	8.0	5.0	Playa.....	3.0	1.9
Yabucoa to Manabo....	9.0	5.6			
Humacao to Yabucoa....	15.0	9.3	Total.....	792.4	492.4
			Total in 1898.....	284.1	176.5

By June 30, 1907, it is expected that the total length will amount to 805.5 kilometers, or 500.5 miles.

RAILWAYS.

A necessary complement to the system of macadam roads is the railway system. The interior of the island being mountainous, a transverse line of railway would be very expensive. As there is little overland trade between the different ports, which trade direct with American wholesale houses, a line of railway across the island would hardly have traffic enough to yield a profit on the heavy investment required. Accordingly the board of public works, desirous of supplying the most urgent needs first, decided to adhere in the main to the plan elaborated by the Spaniards before the American occupation, namely, a belt line of railway close to shore around the island, leaving the interior to be served by the macadam roads. It so happens that the land through which the railway runs is the sugar land, which at present raises the most valuable crop. The sugar estates are either situated on the line itself or have short branches running to their establishments. The coffee and tobacco plantations are situated among the hills and mountains of the interior, and their products have to be brought down to port or to the railway station either by wagon on the macadam roads, where they exist, or by oxcart or mule train where roads are yet in their primitive condition. As fast as the traffic justifies it, branch lines will be run into the interior. In this work the abundant water power in many of the valleys is destined to play a decisive part. It is stated, for example, that a line from San Juan to the Caguas district would be of easy grade, though with many windings, and that Loiza River would afford ample power for working the road by electricity at very low expense. In this case the traffic would not have to be created, as the existing traffic over wagon roads would be more than is required to make the road pay. Thus the routes of transportation, when fully developed, will probably consist of three systems: (1) A belt of steam railway along the coast; (2) electric lines in the valleys where the grade is not too steep; (3) macadam roads wherever railways are not practicable.

When the island became an American possession, on October 18, 1898, the railways existing and in operation were those built under franchise with guaranteed interest by the Compañía de los Ferrocarriles de Puerto Rico, a French company, as follows:

RAILWAY MILEAGE IN OPERATION IN PORTO RICO ON OCTOBER 18, 1898.

LINE OF RAILWAY.	Kilo- meters.	Miles.
On the north:		
San Juan westward to Camuy.....	100	62
Martin Pena to Carolina.....	14	9
On the west: Aguadilla to Mayaguez.....	54	33
On the south: Yauco to Ponce.....	35	22
Total.....	203	126

There were also two short lines under franchises granted to Pablo Ubarri and Ramon Valdes for tramways operated by steam power. The first was granted February 18, 1878, for sixty years, from San Juan to Rio Piedras, a distance of 12 kilometers (7 miles), gauge 0.76 centimeter (30 inches); the second for a period of seventy years, from Cataño to Bayamon, a distance of 7.5 kilometers (4.7 miles), the gauge being 1 meter (39 inches).

There was also a 2-foot gauge railway in operation between Mayaguez and Alto Sano, near San Sebastian, this being a portion of 17 kilometers (10.6 miles) of the line 45 kilometers (29 miles) long to be built between Mayaguez and Lares, via San Sebastian, under a franchise granted in the year 1896 to J. Tornabells. This road was opened to traffic in January, 1898, but was unsuccessful financially and collapsed in December, 1902.

The Compañía de los Ferrocarriles de Puerto Rico, to settle its claims against the government of Porto Rico, had its franchise renewed under an ordinance of the executive council dated October 28, 1901.

The American Railroad Company of Porto Rico, successor of the old company, has continued construction under the new franchise, and 43 kilometers of railroad between Hormigueros and Yauco were opened in October, 1903, finally connecting the cities of Aguadilla and Mayaguez with Ponce and Yauco and giving great impulse to the sugar-cane industry by the facilities afforded to the transportation of cane to the different factories from the rich valleys traversed by the line. Extensions of the track have been made as follows: From Carolina to central Buena Vista; from the main line near Arecibo to that town; from the main line in Mayaguez to the harbor of Mayaguez; from the main line in Aguadilla to the harbor of Aguadilla.

The line from Ponce to Guayama comprised in the franchise of the American Railroad Company was assigned, with the consent of the executive council, granted by ordinance of July, 1902, to a corporation called "American Railroad Company, Central Aguirre Operator." The line is about 56 kilometers (35 miles) in length, of which over 25 kilometers (14 miles) had been constructed at the end of 1904 and are in operation for the transportation of sugar cane to the Central Aguirre.

At the end of 1906 the belt line, which is ultimately to encircle the island, was in the following condition: The gap of 43 kilometers (27 miles) at the northwest corner, between Camuy and Aguadilla, had been filled in, and on January 1, 1907, through trains began to run from San Juan to Ponce, or around the western half of the island. At the south, on the line between Guayama and Ponce trains were running between Guayama and Santa Isabel. In the interval from Santa Isabel to Ponce, the work was about half done, and it was expected that connection between Ponce and Guayama would be established by the end of 1907. Eastward, the line from San Juan had not been extended beyond Carolina, but a line between Mameyes and Naguabo is being built. Thus by the end of 1907 the belt line will be practically completed, except the gap between Naguabo and Guayama, a distance of some 35 miles, where no railway has yet been planned. In addition to the above, the American Railway Company of Porto Rico is under contract to build before January 1, 1910, a line from San Juan to Naguabo on the east coast, via Caguas and Humacao, and from Arecibo to Aguadilla via Lares, with a branch from Lares to Añasco. In this way the rich coffee district around Lares will secure two outlets to tide water.

Of late the company has greatly increased its rolling stock, 9 new Baldwin locomotives and 331 cars having been purchased. The number of passengers carried increased from 125,697 in 1902 to 179,175 in 1904, while the tonnage hauled rose from 116,210 tons in 1902 to 348,405 tons in 1904. The total gross receipts during these years increased approximately 72 per cent, from \$227,769.57 to \$391,890.28.

OCEAN TRANSPORTATION.

Among the statistical tables forming the appendix to this monograph will be found a list of the steamship lines engaged in trade between Porto Rico and the United States and between Porto Rico and foreign countries. Besides the vessels of the regular lines, tramp steamers call at irregular intervals, and many small schooners carry on coastwise trade among the ports of the islands.

Four lines of ships at present connect Porto Rico with New York.

NAVIGATION AT CHIEF PORTS.

Porto Rico has nine ports of entry, namely, San Juan and the sub-ports of Aguadilla, Arecibo, Arroyo, Fajardo, Humacao, Mayaguez, Ponce, and Guanica. The relative importance of the principal ports is shown in the following tables:

NUMBER, CHARACTER, AND TONNAGE OF VESSELS ENTERING SAN JUAN, PONCE, AND MAYAGUEZ, FISCAL YEARS ENDED JUNE 30, 1905 AND 1906.

SAN JUAN.

NATIONALITY.	1905				1906			
	Steam.		Sail.		Steam.		Sail.	
	Ves-sels.	Ton-nage.	Ves-sels.	Ton-nage.	Ves-sels.	Ton-nage.	Ves-sels.	Ton-nage.
American.....	184	522,629	35	25,982	215	720,850	52	38,151
Foreign.....	129	367,493	25	4,419	128	401,482	20	3,131
Government vessels:								
American.....					73			
Foreign.....					2			
Other vessels.....					18			

PONCE.

American.....	78	234,673	32	18,566	111	332,499	41	25,616
Foreign.....	123	277,654	36	6,037	108	276,371	33	5,270
Government vessels:								
American.....	3							1
Foreign.....							1	

MAYAGUEZ.

American.....	61	189,092	19	5,088	92	308,945	25	9,185
Foreign.....	73	132,459	31	4,215	80	153,607	20	3,025
Government vessels:								
American.....	9				17			
Foreign.....	1				1			

This does not include the visits of vessels exclusively in the coastwise trade of the island. Of these there are 3 small steamers and 54 sailing vessels ranging from 6 to 69 tons.

FOREIGN TRADE OF PORTO RICO, FISCAL YEAR ENDED JUNE 30, 1906.

PORT.	Imports from foreign countries.	Exports.		
		United States.	Foreign countries.	Total.
	Dollars.	Dollars.	Dollars.	Dollars.
San Juan.....	1,488,358	7,193,140	911,922	8,105,062
Ponce.....	789,672	4,645,451	1,068,218	5,713,669
Mayaguez.....	219,441	1,152,149	1,109,277	2,261,426
Aguadilla.....	17,488	368,785	553,974	922,759
Arecibo.....	52,157	1,019,051	301,642	1,320,693
Arroyo.....	25,135	2,950,865	50,838	3,001,703
Humacao.....	4,445	725,266	35,514	760,780
Fajardo.....	6,088	1,087,754	83,684	1,171,438
Total.....	2,602,784	19,142,461	4,115,069	23,257,530

The ports of San Juan, Ponce, and Mayaguez are the only ones that collect harbor dues. In the year ended June 30, 1906, the totals of dues collected at these ports were as follows: San Juan, \$20,829; Ponce, \$3,615; Mayaguez, \$2,783.

PILOTAGE, PROVISIONS, AND DOCKAGE.

Pilotage is compulsory for certain vessels. There are pilots at the principal ports, who come off in small boats to vessels making signals outside the entrance. There are no seagoing towboats in the island. In some of the harbors there are large steam launches which sometimes assist lighters and vessels when inside.

Provisions, ice, lumber, and some ship chandler's stores can be obtained at San Juan, Ponce, and Mayaguez. Some provisions can be obtained at other places. Coal for vessels can be obtained at San

Juan. There are machine shops at San Juan and Ponce, and ordinary repairs to machinery can be made. There are also small machine shops at other points on the island. The nearest dock is at St. Thomas. This is a floating dock; length, 280 feet; length of keel, 288 feet; inside breadth, 72 feet; greatest draft, 21 feet; capacity, 3,000 tons.

The New York and Porto Rico Company owns the only modern pier in existence in Porto Rico, situated near the head of the inner harbor of San Juan. It was built some five years ago, then destroyed by fire, and afterwards rebuilt in first-class modern style, the pier itself being of concrete, the freight shed of corrugated iron.

HARBOR OF SAN JUAN.

San Juan is at present the only good harbor on the island. It consists of a deep indentation of the north coast in the eastern third of the island, being one of a series of lagoons cut off from the sea by coral reefs and gradually filled with sediment by the rivers. The bay of which the harbor is a part runs in from the ocean in a southeasterly direction, being separated from the ocean by the long, narrow island on which the town of San Juan is situated. Just at its western extremity this island becomes wider and projects southward into the bay in a triangular spur of land called Puntilla Point, where the naval station is situated. Inside this point is the inner harbor, completely protected on the west by Puntilla Point and on the north by the rocky ridge on which the city of San Juan is located. Thus, so far as natural conditions are concerned, this is almost an ideal harbor. Its great drawback at present is its shallowness and the narrowness of its channel. The available depth of the present harbor can not be said to exceed 24 feet, and the channel and anchorage ground are so restricted that even comparatively small ships are obliged to make many maneuvers of backing and starting to turn within the deep water, while larger ships find it difficult to enter. Thus the U. S. S. *Louisiana*, which conveyed President Roosevelt to Ponce, had to wait for his return to that port because she could not enter San Juan Harbor safely. Investigations by Prof. William H. Burr have shown that the harbor could be dredged to a sufficient depth without difficulty and at low cost, and the natural conditions are such that it would admit of almost indefinite extension. The material dredged could be used to fill the marshes east of the inner harbor, which would afford much-needed space for the expansion of the sadly crowded city. It is estimated that the value of the land thus reclaimed would amply suffice to pay the cost of the entire dredging operations. A glance at the map shows that San Juan lies directly in the path of vessels from Europe to the prospective Panama Canal, and if the harbor were made accessible to vessels of large draft many of them would make it a port of call, which would largely increase the business of the port. The value of the harbor to commerce in this respect may be gathered from the distances shown in the second column of the following table, courteously furnished by the Bureau of Equipment, United States Navy:

29764—07—3

DISTANCES BETWEEN SAN JUAN, P. R., AND SPECIFIED NORTH AMERICAN AND EUROPEAN PORTS.

San Juan to—	Nautical miles.	San Juan to—	Nautical miles.
North American ports:		European ports:	
Halifax.....	1,594	Liverpool.....	3,593
Boston.....	1,485	London (via Plymouth).....	3,812
New York.....	1,407	Hamburg.....	4,131
Philadelphia.....	1,372	Antwerp.....	3,867
Baltimore.....	1,397	Havre.....	3,652
Savannah.....	1,164	Bordeaux.....	3,641
Galveston.....	1,702	Gibraltar.....	3,374
New Orleans.....	1,539	Genoa.....	4,230
Vera Cruz.....	1,772	Naples.....	4,349
Colon (Panama).....	1,004		
Habana.....	984		

These distances suffice to make it certain that when the harbor is put in proper condition many vessels will regularly stop there for coal and other necessities on their way to and from Colon, and probably to Mexican and Central American ports.

On March 2, 1907, the President approved the river and harbor appropriations act, which contains the following item:

Improving the harbor of San Juan, Porto Rico, in accordance with the report submitted in House Document numbered nine hundred and fourteen, Fifty-ninth Congress, first session, one hundred and fifty-seven thousand five hundred dollars: *Provided*, That the Secretary of War may enter into a contract or contracts for such materials and work as are necessary for the prosecution of said project, to be paid for as appropriations may from time to time be made by law, to an amount not exceeding in the aggregate six hundred thousand dollars, in addition to the amount here appropriated, and in the prosecution of the same may be included the dredging of the entrance channel and areas to the east of Puntilla de la Marina for passage and anchorage, of three hundred and ninety-eight thousand six hundred square yards to be dredged to a depth of thirty feet, and seventy thousand two hundred square yards to a depth of twenty-four feet.

By this act, \$157,500 is made immediately available, and the Secretary of War is further authorized to contract for work to the amount of \$600,000 to be appropriated in future years.

The plan set forth in House Document 914 is based on a report by Capt. C. A. F. Flagler, Corps of Engineers, U. S. Army, who made the survey of the harbor of San Juan in compliance with the provisions of the river and harbor act of March 3, 1905. This report recommended two projects—(1) the dredging of the entrance channel and of a main anchorage area in the inner harbor to a depth of 30 feet; (2) the dredging of a secondary anchorage area east of the primary to a depth of 24 feet. The dredging of the channel will involve the removal of part of the Santa Elena shoal, close to Morro Point on the east side of the entrance and of the coral reef at buoy No. 2 on the west side of the entrance. Between these two shoals the 30-foot channel at present is not more than 600 feet wide. The Santa Elena shoal is especially dangerous to vessels coming from the east, which have to make a wide circuit around it to get into the entrance channel.

OTHER HARBORS.

The two harbors next in importance, Mayaguez and Ponce, are mere open roadsteads, without any natural protection. Guanica Harbor, south of Yauco on the south coast, is a spacious basin, completely landlocked, and with adequate depth of water, but as yet comparatively undeveloped. Jobos Harbor, some 35 miles east of Ponce, has been found by the United States Coast and Geodetic Survey to possess a good depth of water and to be exceptionally well protected. Bahia Honda, on the east coast, and Ensenada Honda, on Culebra Island, though endowed with fine natural advantages, are as yet wholly undeveloped.

One curious feature about many Porto Rican coast towns is that they are not situated on the coast itself, but a short distance inland, each having its "playa" or port connected with it by railroad or wagon road. Thus Mayaguez has its Mayaguez Playa, Ponce its Ponce Playa, Humacao its Humacao Playa, Naguabo its Naguabo Playa, Fajardo its Fajardo Playa. The reason for this phenomenon is probably similar to that which accounts for the position of many European towns on the summits of mountains, namely, the constant danger of warlike attack in former centuries, when the Caribbean swarmed with buccaneers, whose sudden incursions might any day lay a coast town in ruins before help could arrive from the interior.

LIGHT-HOUSE SERVICE.

The safety of navigation in Porto Rican waters is insured by 20 light-houses, as shown in the following list:

LIGHT-HOUSES IN AND AROUND PORTO RICO.

Table with 6 columns: LOCATION, Height, Visibility, Character of light, Intervals, Color of light-house. Rows include Port San Juan, Cataño Range, Anegada Shoal Range, Cape San Juan, Culebrita Island, Point Mulás (Vieques), Port Ferro (Vieques), Point Tuna, Point Figueras, Jobos Harbor, Muertos Island, Cardona Island, Ponce Harbor Range, Guanica, Cape Rojo, Mona Island, Mayaguez Harbor Range, Point Jiguero, Point Borinquen, and Arecibo.

a The height is in feet above sea level.
b The visibility is calculated for an elevation of 15 feet above sea level, and is given in nautical miles.
c B. means blue; BL., black; D., dark; G., gray; L., light; R., red; W., white; F., fixed; FL., flashing.

MAIL, TELEGRAPH, AND TELEPHONE SERVICE.

Important adjuncts to the system of transportation are the post-office, telegraph, and telephone. The post-office, of course, is not a branch of the insular government, being controlled directly by the Post-Office Department, at Washington. The telegraph lines are owned and operated by the insular government, while the telephone lines are owned and operated by private companies.

POSTAL SERVICE.

Of the 79 postmasters in Porto Rico 4 are Americans and 75 are native Porto Ricans. Of the assistant postmasters only 1 is an American. In addition to the above there are 39 post-office clerks, 10 letter carriers, 5 railway postal clerks, 31 star-route contractors, 11 mail messengers, and 3 postal clerks employed on steamers, making

a total of 177 paid employees in the postal service of Porto Rico, exclusive of the inspection department. Of these 18 are Americans and 159 Porto Ricans. The total amount paid to them in the year ended June 30, 1905, was \$114,419.14, of which \$27,150 was paid to Americans and \$86,269.14 to Porto Ricans; \$9,186.47 was paid for the transportation of mail by railways and \$44,200 to steamship companies for the same service. The total cost of the postal service of Porto Rico in the same year was \$167,805.61. The total gross receipts were \$116,040.16, leaving a deficit of \$51,765.45, which was paid by the Post-Office Department of the United States. During the year 94,133 money orders were issued, amounting to \$1,642,103.29, while 64,733 money orders were paid by the island postmasters amounting to \$1,180,085.32.

The details of the mail transportation service are under the supervision of the office of the chief clerk of the railway mail service at San Juan. The following is a summary of this service in operation in 1905:

PORTO RICAN MAIL TRANSPORTATION SERVICE, 1905.

Table with 5 columns: SERVICE, Route, Length, Annual travel, Annual pay. Rows include Star, Steamboat, Railroad, Mail messenger, Special office, and Total.

The post-offices in Porto Rico, with very few exceptions, receive daily mails, and a great number of the post-offices exchange mails twice daily.

The schedules in operation on all routes are arranged so as to permit close connections at all points, and the combination of all schedules forms a chain of direct connections around the entire island and over the military roads from San Juan to Ponce, and Arecibo to Ponce.

One of the most interesting features of the star-route service until recently was the route between Camuy and Aguadilla, a distance of 26.1 miles, over which the mails were carried in automobiles at a high rate of speed. This service had been in operation since July 11, 1904 and was one of the first of its kind in the United States postal service. It ceased with the completion of the Camuy-Aguadilla railway early in 1907.

Fully equipped railway post-office cars are attached to the through railroad trains running between San Juan and Camuy, and between Ponce and Aguadilla, and four railway postal clerks and one substitute railway postal clerk are employed for the distribution of the mails on these trains. Besides the dispatches of mails which are made on the through trains operated between the points named above, express or closed-pouch dispatches are also made between the larger post-offices situated on the railroad lines by all other passenger trains in operation.

Mails are dispatched and received at San Juan to and from New York regularly once a week, and under the terms of their contract with the Post-Office Department the two steamship companies operating between the United States and Porto Rico are also obliged to carry mails on all other steamers operated by them by which advantageous dispatches can be made. The four steamers which run under regular schedule between New York and San Juan are equipped with apartments for the handling and distribution of mail. Three expert railway postal clerks are employed to distribute the mails on these steamers. In this way mail arriving at San Juan can be immediately dispatched, and Ponce and other important points receive their mail within fifteen hours after the arrival of the steamer at San Juan. A letter from New York to Porto Rico may bring a reply within ten days, sometimes even within nine days.

The list of post-offices in operation December 1, 1906, was as follows. Offices in italics are domestic money order offices; those marked with an asterisk (*) are international money order offices:

POST-OFFICES IN OPERATION IN PORTO RICO, DECEMBER 1, 1906.

Post-office.	District.	Post-office.	District.
<i>Adjuntas</i>	Aguadilla.	<i>Lares</i>	Aguadilla.
<i>Aguada</i>	Mayaguez.	<i>Las Marias</i>	Mayaguez.
<i>*Aguadilla</i>	Aguadilla.	<i>Las Piedras</i>	Humacao.
<i>Aguas Buenas</i>	Guayama.	<i>Loiza</i>	Humacao.
<i>Aibonito</i>	Guayama.	<i>Luquillo</i>	Humacao.
<i>Añasco</i>	Mayaguez.	<i>Mameyes</i>	Humacao.
<i>*Arecibo</i>	Arecibo.	<i>Manati</i>	San Juan.
<i>Arroyo</i>	Guayama.	<i>Maricao</i>	Mayaguez.
<i>Barceloneta</i>	San Juan.	<i>Manabo</i>	Humacao.
<i>Barranquitas</i>	Guayama.	<i>*Mayaguez</i>	Mayaguez.
<i>Barros</i>	Ponce.	<i>Moca</i>	Aguadilla.
<i>Bayamon</i>	San Juan.	<i>Morovis</i>	Arecibo.
<i>Cabo Rojo</i>	Mayaguez.	<i>Naguabo</i>	Humacao.
<i>*Caguas</i>	Guayama.	<i>Naranjito</i>	San Juan.
<i>Camuy</i>	Arecibo.	<i>Palo Seco</i>	San Juan.
<i>Canovanas</i>	Humacao.	<i>Patillas</i>	Guayama.
<i>Carolina</i>	Humacao.	<i>Peñuelas</i>	Ponce.
<i>Cataño</i>	San Juan.	<i>*Ponce</i>	Ponce.
<i>Cayey</i>	Guayama.	<i>Punta Santiago</i>	Humacao.
<i>Central Aguirre</i>	Guayama.	<i>Quebradillas</i>	Arecibo.
<i>Ciales</i>	Arecibo.	<i>Rincon</i>	Mayaguez.
<i>Cidra</i>	Guayama.	<i>Rio Grande</i>	Humacao.
<i>Coamo</i>	Ponce.	<i>Rio Piedras</i>	Humacao.
<i>Comerio</i>	San Juan.	<i>Sabana Grande</i>	Mayaguez.
<i>Corozal</i>	San Juan.	<i>Salinas</i>	Guayama.
<i>Culebra</i>	Humacao.	<i>San German</i>	Mayaguez.
<i>Dorado</i>	San Juan.	<i>*San Juan a</i>	San Juan.
<i>Fajardo</i>	Humacao.	<i>San Lorenzo</i>	Guayama.
<i>Florida</i>	San Juan.	<i>San Sebastian</i>	Aguadilla.
<i>Guanica</i>	Aguadilla.	<i>Santa Isabel</i>	Guayama.
<i>*Guayama</i>	Guayama.	<i>Santurce</i>	(See
<i>Guayanilla</i>	Ponce.	<i>San Juan.)</i>	
<i>Gurabo</i>	Guayama.	<i>Toa Alta</i>	San Juan.
<i>Hatillo</i>	Arecibo.	<i>Toa Baja</i>	San Juan.
<i>Hormigueros</i>	Mayaguez.	<i>Trujillo Alto</i>	Humacao.
<i>*Humacao</i>	Humacao.	<i>Utado</i>	Arecibo.
<i>Isabela</i>	Aguadilla.	<i>Vega Alta</i>	San Juan.
<i>Jayuya</i>	Arecibo.	<i>Vega Baja</i>	San Juan.
<i>Juana Diaz</i>	Ponce.	<i>Vieques</i>	Humacao.
<i>Juncos</i>	Guayama.	<i>Yabucoa</i>	Humacao.
<i>Lajas</i>	Aguadilla.	<i>Yauco</i>	Aguadilla.

^a Including Santurce station.

TELEGRAPH AND TELEPHONE SERVICE.

When Porto Rico became an American possession, it had a telegraph system, owned and operated by the government, and extending even to the smallest villages. It was, however, in a bad state of repair, the old Morse tape instruments were used, and the operators were so inefficient that they often found it convenient to send messages by mail rather than by wire. This system was practically destroyed by the hurricane of August 8, 1899.

The United States Signal Corps substituted modern instruments and expert operators, the number of stations being gradually reduced from about 60 to 10 during the period of military administration, and the system as reduced being transferred to the insular government on February 1, 1901.

The telegraph lines of the island are all in charge of the bureau of insular telegraph, belonging to the department of the interior of Porto Rico, with headquarters at San Juan. With the exception of the superintendent and a few of the managers the employees of this bureau are all native Porto Ricans, most of whom studied telegraphy in the school conducted by the bureau. A considerable number of them are young women, who have shown a gratifying efficiency. It is proposed to maintain the school until the necessity for it shall have disappeared. As the telegraph system belongs to the insular government the members of the legislature and most of the government officials have the right to send free messages. The length of wire on June 30, 1905, aggregated 832 kilometers (517 miles). During the fiscal year 1906, 105 kilometers (65 miles) of line were built at a cost of \$3,177. On February 1, 1901, when the telegraph system was transferred from the United States Signal Corps to the bureau of insular telegraph, the total length of

telegraph wire was 669 miles. Forty stations were in operation at the end of 1905, as shown in the following list:

TELEGRAPH STATIONS IN OPERATION IN PORTO RICO IN 1905.

Adjuntas.	Cayey.	Juncos.	San Juan.
Aibonito.	Ceiba.	Lares.	Rio Piedras.
Arecibo.	Ciales.	Manati.	Salinas.
Añasco.	Coamo.	Mayaguez.	San German.
Arroyo.	Fajardo.	Naguabo.	San Sebastian.
Barceloneta.	Guayama.	Playa de Ponce.	Utado.
Bayamon.	Gurabo.	Ponce.	Vega Baja.
Caguas.	Humacao.	Quebradillas.	Vieques.
Camuy.	Isabela.	Rio Grande.	Yabucoa.
Carolina.	Juana Diaz.	Sabana Grande.	Yauco.

The connection between Vieques (Crab Island) and the mainland of Porto Rico is made by heliograph. At first the station on the mainland was at La Fortuna, but as this was in line with the shipping in the harbor of Isabel II on Vieques, which interfered with the signals, the station has been moved to La Ceiba, which offers an unobstructed line for signaling. The heliographic service gives excellent results and will probably continue to be the most satisfactory arrangement for Vieques Island till wireless telegraphy replaces it.

The occurrence of discrepancies in the transmission and receipt of messages necessitated the establishment of a standard time service. A chronometer was procured and the service was installed at the San Juan office March 1, 1903. Daily at 12 o'clock noon the time signal is transmitted to every station on the island. In nearly every municipality the town clocks are now set to standard, and complaints of slow delivery are no longer made. The time used is that of the sixtieth meridian, designated as intercolonial time (one hour earlier than eastern time). The sixtieth meridian passes a little to the east of the Lesser Antilles and through the Gulf of St. Lawrence between Cape Breton and Newfoundland.

Unlike the telegraph, the telephone lines are private property. The cities of San Juan, Ponce, and Mayaguez have their local telephone service. A franchise for a long-distance line on the south side of the island has been granted to Pedro Juan Rosaly, the capital interested being chiefly American. This line runs from Guayama westward to San German. The company has also secured control of the local Ponce line, which was formerly a Spanish line. A franchise for a line through the northern portion of the island was recently granted to Behn Brothers. This line runs from Carolina westward to Hormigueros. It has bought out the old San Juan line, owned by a Spanish company.

GOVERNMENT.

The government of Porto Rico was established by the organic act, generally known as the Foraker Act, approved April 12, 1900, which became effective on May 1 of that year. It is styled "An act temporarily to provide revenues and a civil government for Porto Rico, and for other purposes," implying in this very title that the arrangement made by the act is merely provisional, to enable the government to be carried on until experience shall have indicated the most satisfactory permanent status to be given to the island. By that act the inhabitants of Porto Rico, except such as preferred to retain their allegiance to Spain, were constituted as a body politic under the name of "the people of Porto Rico," which includes also such citizens of the United States as may reside in Porto Rico.

LEGISLATIVE AND EXECUTIVE.

The local legislative power granted by the act is vested in a legislative assembly, consisting of two houses—the executive council and the house of delegates.

The executive council consists of 11 members, at least 5 of whom must be "native inhabitants of Porto Rico." They are all appointed for a term of four years by the President of the United States by and with the advice and consent of the United States Senate. Six out

of the 11 are the heads of the six executive departments established by the organic act, namely, the secretary of Porto Rico, the attorney-general, auditor, treasurer, commissioner of the interior, and commissioner of education. The salary of each of these is \$4,000, except that of the treasurer, which is \$5,000. They receive no additional salaries as members of the council. The salary of each of the remaining five members of the council is \$3,000. These salaries were fixed by the organic act. Hitherto the heads of the six departments have all been Americans. It has been customary to elect the secretary of Porto Rico as president of the executive council. A seventh department, the department of health, charities, and corrections, was created by act of the legislative assembly in 1904 and placed in charge of one of the Porto Rican members of the executive council.

The house of delegates consists of 35 members elected every two years by the qualified voters of the island, five delegates for each of the seven electoral districts. (See page 5.) Its proceedings are conducted in Spanish. The organic act fixes the pay of each delegate at \$5 per day while the house is in session and traveling expenses.

The executive council is a continuing body, sitting throughout the year in the executive session, confirming appointments by the governor, and attending to the details imposed on it by the laws of Porto Rico. It holds regular sessions every Thursday afternoon at 3 o'clock and is subject to call in special session at any time when necessary. Its debates are conducted in English, but an interpreter translates the remarks into Spanish when the native members require it.

The legislative assembly convenes on the second Monday in January and sits for sixty consecutive days. It has complete legislative powers on all matters except the granting of franchises, privileges, and concessions, which, by the organic act, is vested in the executive council alone. Bills may originate in either house, but must receive the approval of a majority of both houses and the approval of the governor before becoming laws. A bill vetoed by the governor becomes a law if passed by the two houses by a two-thirds vote. The laws passed by the legislative assembly must be submitted within sixty days to Congress, which reserves the right to disapprove any act.

The governor, by the organic act, was given the power to grant pardons and reprieves and to veto the acts of the legislative assembly. In addition, the President of the United States was authorized by the organic act to assign to the governor other duties not at variance with law. He has since been invested with various executive powers by the legislative assembly. He appoints all the judges of the district courts of the island, all the justices of the peace, and many other officials. He receives and acts on the resignations of alcaldes (mayors) and members of the municipal councils and, by appointment, fills all vacancies created by resignation, removal, or other cause in these municipal offices. He is the commander in chief of the insular police. His salary is \$8,000 a year, in addition to which he is entitled, under act of Congress, to the occupancy of the building formerly occupied by the Spanish governor-general, and popularly known as La Fortaleza or Santa Catalina.

By the terms of the Foraker Act the people of Porto Rico elect every two years a Commissioner to Washington to represent the interests of the island. By courtesy of the House of Representatives he is given a seat on the floor of that body, and he is also a member of the Committee on Insular Affairs of the House, and is allowed a voice, but no vote.

The secretary performs the usual duties of a secretary of a State or Territory. He becomes acting governor in the absence of the governor.

JUDICIAL.

The department of justice comprises the office of the attorney-general; the supreme, district, and municipal courts; the justices of the peace, the registrars of property, and the notaries. The

attorney-general is the head of the department and has administrative jurisdiction over the courts and all officials connected with the department.

The supreme court is composed of five judges appointed by the President of the United States. Its sessions are held at San Juan. It is the court of last resort for Porto Rico, but in certain cases appeal from its decisions may be taken to the Supreme Court of the United States.

The island is divided into seven judicial districts, each with a district judge, appointed by the governor for a term of four years, and having original jurisdiction in civil and criminal matters.

The municipal courts have jurisdiction in minor criminal and civil matters. There are 24 of them, each including from one to four municipalities. The judges, secretaries, and marshals of these courts are elected by popular vote, each for a term of four years.

There are 66 justices of the peace in the island, appointed by the governor, and having functions corresponding to those of police judges in the United States.

There are 9 registrars of property in Porto Rico, appointed by the governor. Their salaries are paid by the insular government and vary with the importance of the district.

At present there are about 60 notaries in the island. Any person may become a notary by complying with the legal requirements. Under the new procedure each notary has jurisdiction throughout the island.

Porto Rico is a United States judicial district and is provided with a United States district court, the district judge, district attorney, and marshal being appointed by the President for a term of four years. All proceedings before this court are conducted in English. It holds sessions at San Juan, Ponce, and Mayaguez.

On April 1, 1901, trial by jury was established by act of the legislative assembly. During the first year and a half only 24 jury trials were held in the island, but since then this method has become more popular, so that now every district has a regular calendar of jury cases at each term of court.

An act creating a code commission was approved at the last session of the legislative assembly, and took effect on July 1, 1906. This commission is to revise and compile all the laws of Porto Rico, and make a report to the legislative assembly within two years. The governor has appointed three prominent Porto Rican lawyers to serve on the commission.

ADMINISTRATIVE DEPARTMENTS.

The treasury department has charge of all the financial affairs of the insular government, except those belonging to the auditor's office. Details of the operations of the treasury department will be found on a subsequent page under the head of "Finance."

The auditor is required to keep an account of all receipts and disbursements of the insular government. His office comprises a division of bookkeeping, a division of internal-revenue accounts, and a division of audit.

The department of the interior comprises the following bureaus and divisions: Bureau of public works, division of public buildings, bureau of public lands, bureau of insular telegraph, bureau of docks and harbors, and division of archives. In addition to these, the department has supervision over the shipping of coffee to the commercial agent in New York and the inspection and collection of fees on all fertilizers sold in Porto Rico.

The bureau of public works attends to the maintenance and construction of all roads which belong to the insular system (all macadamized roads), surveys all proposed roads and bridges, designs and plans bridges and public buildings (except schoolhouses), repairs and maintains public buildings, inspects railways, and, when needed for the protection of the public, orders their repair.

The division of public buildings has charge of the maintenance of the buildings which formerly belonged to the Spanish Government. These are of very good construction, and the principal

improvement introduced has been the installation of modern sanitary plumbing.

The bureau of public lands has control of all the public lands of the island, amounting to about 80,000 acres. These are scattered in little patches all over the island, their location and boundaries being in many cases very imperfectly known, no survey of them having as yet been made. For the present these lands have generally been rented to the highest bidder, and it has been the practice to award them even to a single bidder. When their value becomes better known, a minimum rental will probably be fixed, below which no bids will be accepted. The largest tract of public land is comprised within the area set apart for the Luquillo Forest Reserve. By the law of the island, no public lands can be sold except with the approval of the legislative assembly. They can be leased for a period not exceeding fifteen years by the governor, with the consent of the executive council.

For several years an endeavor has been made to introduce the system known as the "Torrens law" of land titles, the bill to that effect being combined with one providing for a cadastral survey. It was expected that such a law would do away with the uncertainty prevailing to a large extent in Porto Rican land titles, and would enable the government to ascertain the extent and location of the public lands. The law was not passed in the form hitherto proposed, but some similar measure will probably be adopted in the near future. The insular treasury is collecting rent on public lands and buildings amounting to \$6,290.54 a year. The land rented being less than 1 per cent of the total acreage of public lands in Porto Rico, much of which can not be considered first class, it will be seen that a great benefit would be derived from the renting of all the public lands in the island. This, however, can not be done until these lands are surveyed and their title established.

The bureau of insular telegraph controls and operates the insular telegraph system, which is owned by the insular government, there being no private telegraph lines on the island.

The bureau of docks and harbors carries out the regulations for docks and harbors, as passed by the executive council June 27, 1903. All port and dock charges are collected by the captains of the port, who keep records of vessels entering the ports of San Juan, Ponce, and Mayaguez.

The division of archives has charge of the collection and classification of the archives accumulated by the Spanish administration during the four hundred years of its domination. These records are exceedingly voluminous and were found scattered all over the island.

The department of education has charge of the public school system of the island, in cooperation with the municipalities.

In 1904, by act of the legislature of Porto Rico, the bureaus of insular health, of insular charities, and of insular prisons were consolidated into one department, known as the department of health, charities, and correction, and by the terms of the law a member of the executive council not charged with other administrative duties was placed at the head of the new department. This department has complete charge of all the charitable and correctional institutions of the island, as well as supervision over matters concerning the public health.

The personnel is composed of the head of the department, who is known as the director of health, charities, and correction, and under him is the supervisor of health, who has charge of all the sanitary matters of the island, and who also acts as the assistant head of the department. There is also a supervisor of charities and a supervisor of prisons. The director of the department supervises all three branches of the work.

It is the duty of the supervisor of health to draw up, with the approval of the executive council, such general sanitary measures as may be necessary, and to enforce them throughout the island, and also to supervise the municipal sanitary regulations. He collects the vital statistics and supervises the veterinary inspection and the food and health inspection. His bureau comprises two med-

ical inspectors, one veterinary inspector, and a plumbing inspector. He also has direct control of the insular vaccine station and of the chemical laboratory.

The supervisor of charities has complete charge of all the charitable institutions of the island. These are at present the leper colony, with 25 patients and accommodations for about 40, situated on Cabras Island, near San Juan; the recently opened asylum for the blind, at Ponce, with accommodations for about 100 permanent patients; the Insular Insane Asylum, at San Juan, with accommodations for 150 patients; the insular orphan asylum for girls, called the "Girls' Charity School," at Santurce, with accommodations for about 200 inmates; and the insular orphan asylum for boys, called the "Boys' Charity School," at Santurce, with accommodations for about 300.

The supervisor of prisons controls the insular penitentiary, situated at San Juan, and the district jails, situated at San Juan, Ponce, Mayaguez, Humacao, Arecibo, Guayama, and Aguadilla.

In most of the towns of the island there are hospitals supported by the municipalities, but in most instances they are thoroughly inadequate for the purpose, and with few exceptions are poorly equipped and overtaxed. The private institutions of the island are the Women and Children's Hospital, at San Juan; the Presbyterian Hospital, at Santurce; the small hospital of La Concepcion, in San Juan; and the Tricoche Hospital, at Ponce.

Besides these hospitals there are the naval, military, and marine hospitals at San Juan, managed by the United States Government.

POLICE AND MILITARY.

The insular police consists of a police commission, appointed by the governor with the consent of the executive council. The force in 1906 consisted of a chief, with the military title of colonel, an assistant chief, with the title of major, six captains, one first lieutenant and adjutant, six first lieutenants, a second lieutenant and bandmaster, seven second lieutenants, twenty sergeants, seventy-five corporals, 650 guardsmen, and one voucher clerk. Of this force about 50 are mounted. This small body of men preserved order in an island 3,435 square miles in extent, with a population of a million. Under the Spanish régime that task required a garrison of over 1,000 men, in addition to the municipal police. A law passed by the legislative assembly in 1906 provides for the division of the island into seven police districts instead of six as heretofore, increasing the force to 700 men, with authority given to the governor to add to their number when occasion requires, and increasing the pay of officers and men. The efficiency of this force was severely tested by several strikes occurring in 1906, the principal one being that of the longshoremen, who demanded of the New York and Porto Rico Steamship Company 25 cents an hour instead of the 15 cents which they had been receiving.

The United States Government maintains in Porto Rico a regiment of the United States Army, composed of 548 privates, all natives of Porto Rico, and 31 officers, 8 of whom are citizens of Porto Rico. Citizens of Porto Rico are also eligible for enlistment in the Regular Army of the United States, and the Porto Rico regiment may be ordered for service outside of the island. Congress also passed acts providing for the appointment of one cadet for the Military Academy, at West Point, and one midshipman for the Naval Academy, at Annapolis, from Porto Rico, both to be natives of the island and to be appointed by the President of the United States on recommendation of the governor of Porto Rico. The continuance of the regiment is of great moment to the people of Porto Rico, not because it is needed for the preservation of peace, which in fact is not part of its duty, but as a school for the mental and physical development of many of the natives. It is a noticeable fact that, after service with the regiment, owing to the regular life, nutritious food, and daily exercise, the men improve considerably in size and physique. Of the 800 men who have been discharged from the regiment, many have been enabled, through their

knowledge of the English language acquired in the regiment, to pass civil-service examinations for entrance to the Federal service. In others, the habits of discipline and steady attention to duty acquired in the regiment have caused them to be sought after by the plantation owners and merchants to fill responsible places. The existence of the regiment, composed of native Porto Ricans, is a source of great satisfaction and pride to the people and does much to inspire respect for the American flag. The headquarters of the regiment are at San Juan, where Companies A, B, C, D, and E are stationed; Companies F, G, and H are stationed at Cayey.

The United States naval station at San Juan comprises the naval hospital, the marine barracks, and the wireless telegraph station. By proclamation of the President, dated June 26, 1903, a tract of 80 acres of land in the heart of the city of San Juan, and covering a large portion of the available water front, in addition to a large point of land, the Puntilla Point, embracing about 5½ acres, was reserved for naval purposes, but no important works have yet been begun.

MUNICIPAL GOVERNMENT.

Subject to the insular government are the municipal governments, deriving their powers from a law enacted by the legislative assembly. The insular government hitherto exercised supervision over these municipalities through the secretary of Porto Rico, but this control was abolished by a law passed by the legislative assembly on March 8, 1906.

These municipalities and their organization are largely a heritage from the Spanish Government. Prior to the American occupation, local self-government, as understood in the United States, was practically nonexistent. The "distritos municipales" were agencies of the central government without independent life. In 1896 and 1897, indeed, certain powers of self-government were nominally vested in the municipalities, but this law was never carried out.

This state of affairs was greatly altered by the American occupation. To the military governors the word "municipality" suggested the political independence of an American city or town, and the tendency was thus, unconsciously or deliberately, to relax the central control over these local governments.

To the civil administration inaugurated on May 1, 1900, this tendency seemed premature. In lieu thereof, the newly organized bureau of municipal affairs adopted a policy of preserving over municipal finances that degree of control which the laws of Porto Rico dictated and the fixity of long tradition rendered advisable. On June 3, 1900, the bureau of municipal affairs of the treasury department issued a circular directing the municipalities to submit their budgets for the approaching fiscal year. Under the law in force previous to March 8, 1906, the treasurer prescribed a uniform system of keeping of municipal accounts, deposit of all moneys, the making of disbursements, and required uniform annual and other reports, setting forth the financial condition of the municipalities. By the law of March 8, 1906, the powers of the local governments have been greatly enlarged. The secretary of Porto Rico no longer exercises supervision over the municipalities, but, if any citizen feels aggrieved by the action of any municipality, it is the duty of the attorney-general of Porto Rico, on being informed, to apply to the proper district court for a mandamus to compel any delinquent municipality to comply with the law. Under the old law municipalities were authorized to levy special industrial and commercial license taxes on approval by the executive council of the insular government. Under the new law this approval is no longer required, but the law itself contains a schedule of maximum rates of taxation, which may not be exceeded. It also contains a provision intended to guard against appropriations in excess of revenue, and in this case, too, it is the duty of the attorney-general of Porto Rico to prosecute, in the proper district court, any municipality that fails to comply with the law. The new law also abolished the boards of road supervisors created by the law of March 1, 1901, one for each of the seven road districts of the island, their functions being now intrusted to the municipalities.

There are 66 such municipalities in the island. Each is governed by a mayor (alcalde) and a municipal council, both elected by the voters in the municipality for a term of four years (according to law of March, 1906), but vacancies in the office of mayor or councilman are filled by the governor with the approval and consent of the executive council. The number of members of the council is fixed by a scale depending on the number of inhabitants. Formerly the mayor, in addition to his executive functions, exercised those of police judge. This power was abolished by a law establishing police courts with judges appointed by the governor. Other municipal authorities and organizations are: The municipal judge, the local board of public instruction, the local board of health, and the local board of charities. By an act of the legislative assembly the maintenance of public order in municipalities the city limits of which contain less than 6,000 inhabitants has been turned over to the insular police, and in those towns the municipal police has been abolished.

EMPLOYEES IN THE CIVIL SERVICE.

Since the extension of the civil-service laws and rules over all classified positions in Porto Rico in March, 1902, there has been a marked increase in the interest displayed regarding civil-service matters in general and a steady growth in the number of applicants for examination for positions in the various branches of the classified service, indicating the success of the competitive system under local conditions. Residents of Porto Rico are given equal opportunity with residents of the United States for examination and appointment to positions in the Federal service, both in Porto Rico and in the United States. All citizens of the United States and Porto Rico possessing the necessary qualifications and who can comply with the requirements, as provided by the civil-service rules, are eligible for examination. All examinations are competitive, and competitors are rated without regard to any consideration other than the qualifications shown in their examination papers.

All examinations held in the United States are also announced and held in Porto Rico. Examinations for the various positions in the departmental service are held regularly in the spring and fall of each year at San Juan and at Ponce, as announced in the schedule contained in the Manual of Examinations which is published twice yearly by the United States Civil Service Commission. This Manual of Examinations contains full information and can be obtained by applying to the secretary of the board of civil-service examiners at San Juan.

Examinations are also held at San Juan and Ponce for positions in the post-office service of those cities and for positions in the customs service of Porto Rico. These examinations are held at least once a year, or as frequently as may be necessary to establish registers of eligibles, and, as a rule, the examinations are given in both English and Spanish.

Under the law of apportionment, Porto Rico is entitled to 95 appointments in the departmental service at Washington. About 25 legal residents of Porto Rico have been appointed to apportioned positions in the District of Columbia, and it is estimated that the number of Porto Ricans occupying such positions will increase rapidly under the law of apportionment as soon as the Commissioners' registers for filling apportioned positions receive a sufficient number of eligibles from Porto Rico to enable the Commission to issue certificates containing only the names of residents of the island.

CITIZENSHIP AND SALARIES OF EMPLOYEES OF THE INSULAR GOVERNMENT OF PORTO RICO, JUNE 30, 1905.

SALARY.	Porto Ricans.	Americans.	Others.
\$2,000 per annum or over.....	38	32	1
\$1,000 to \$2,000 per annum.....	169	113	1
Less than \$1,000 per annum.....	2,341	168	3
Total number of employees.....	2,548	313	5
Total salaries paid.....	\$1,220,567	\$355,200	\$5,415

In addition to these, there are a great number of municipal offices supported from municipal funds which are entirely occupied by Porto Ricans. The policy of the insular government is to fill all places with Porto Ricans as fast as suitable candidates become available.

CUSTOMS SERVICE.

The collection of customs on goods entering Porto Rico from foreign countries is a function not of the insular but of the Federal Government, performed by officials under orders of the United States Treasury Department at Washington, but the revenue thus collected, after deducting the cost of collection, is by Federal law turned over to the insular treasury, to be expended for the benefit of Porto Rico. The customs service in the island is in charge of a collector of customs for Porto Rico, with headquarters at the port of San Juan, one special deputy collector and one deputy collector at San Juan, deputy collectors in charge at the subports of Ponce, Mayaguez, Arecibo, Arroyo, Aguadilla, Humacao, and Fajardo, and an inspector in charge of the island of Vieques, belonging to the subport of Fajardo. The tariff law of the United States is in operation in Porto Rico, with reference to imports from all foreign countries, but all articles from the United States are admitted free of duty and all articles from Porto Rico are admitted to the continental United States free of duty, the island of Porto Rico being considered a district of the United States customs service.

WEIGHTS AND MEASURES.

When Porto Rico became an American possession the metric system of weights and measures was found in general use, though certain old Spanish measures and weights, such as the cuerda (1.008 acres) and the arroba (25.36 pounds), were still current for certain purposes. As there is a possibility that the movement for the adoption of the metric system in the United States may eventually be successful, it was deemed wise to retain that system in Porto Rico (as well as in the Philippines).

CORPORATIONS.

The laws governing foreign and domestic corporations in Porto Rico are as liberal as is consistent with the public welfare, and have been framed to meet the conditions in the island. They do not differ greatly from the general corporation laws in the United States, and are modeled after those of New Jersey.

As to foreign corporations, the civil code of Porto Rico provides that all corporations or joint stock companies organized under the laws of any State or of the United States, or of any foreign government, shall, before doing business within this island, file in the office of the secretary of Porto Rico a duly authenticated copy of their charters or articles of incorporation, and also a statement verified by the oath of the president and secretary of said corporation, and attested by a majority of its board of directors, showing: (1) The name of such corporation and the location of its principal office or place of business without the island; (2) the amount of its capital; (3) the amount of its capital stock actually paid in in money; (4) the amount of its capital stock paid in in any other way, and in what way; (5) the amount of the assets of the corporation and of what the assets consist, with the actual cash value thereof; (6) the liabilities of such corporation and, if any of the indebtedness is secured, how secured and upon what property.

Foreign corporations must pay as fees to the secretary of Porto Rico, for filing charter, 15 cents for each \$1,000 of authorized capital stock, but in no case to exceed \$500; for recording charter, 20 cents for each hundred words; for filing and recording certificate of consent to be sued and appointment of agent, \$5; for issuing certificate of corporate existence, \$3.

Domestic corporations may be organized by three or more persons, with a capital of not less than \$2,000, and must file with the secretary of Porto Rico articles of incorporation similar to those of foreign corporations. All corporations must file annually, in July

of each year, a full report, in prescribed form, with the secretary of Porto Rico.

All domestic corporations must pay to the secretary of Porto Rico, as fees for filing articles of incorporation, 15 cents for each \$1,000 of authorized capital stock, but this fee shall in no case be less than \$25 or more than \$500; for recording articles of incorporation a fee of 20 cents for each 100 words is charged; for issuing a certificate of corporate existence the fee is \$3.

CORPORATION TAXES.

In addition to the above fees, corporations are subject to the following taxes:

(1) The law provides that every corporation incorporated under the laws of Porto Rico shall be assessed to the amount of the actual present value of the capital of such corporation, which value shall not be less than the value of the capital stock and bonds plus the surplus and undivided earnings of the corporation, nor less than the market value of all the real and personal property owned by it in Porto Rico, including in personal property all credits, rights, franchises, and concessions. Foreign corporations are assessed in the same way, with the exception that the actual present value of the capital is taken to include only such part of the capital as can be considered to be employed in the transaction of business in Porto Rico. It will be seen, therefore, that corporations, as respects the general property tax, are treated exactly as individuals. They are assessed on the actual property owned by them in Porto Rico. In the case of some corporations the value of such property can best be obtained by taking the market value of their securities, while in the case of others (and especially industrial corporations) the best basis of assessment is in the valuation of the property owned. Upon the valuation as thus obtained, corporations thus pay the rate of one-half of 1 per cent for insular purposes and one-half of 1 per cent for general municipal purposes. In addition to these, the municipalities also have the power of imposing the special school tax not to exceed one-tenth of 1 per cent, and, in the case of the four municipalities of San Juan, Ponce, Mayaguez, and Arecibo, there is an additional tax for the purpose of providing funds with which to pay the interest and sinking fund charges on account of bonded indebtedness contracted by them.

Special provisions are made regarding the assessment of railway corporations, but these provisions have reference chiefly to the apportionment of the taxes when collected among the different municipalities, and do not affect the general principle that corporations pay upon property owned by them in the same way as individuals.

(2) Surety and insurance companies constitute a special category of corporations and are subject to the following special taxes:

First. An annual tax of 3 per cent of the gross amount of all premiums or dues collected in Porto Rico.

Second. A special stamp tax, to be paid by the affixing of internal-revenue stamps, as follows: For each bond or obligation of the nature of indemnity for loss, damage, or liability, and each bond, undertaking, or recognizance conditioned for the performance of the duties of any office or position issued or executed, or renewed by any surety company, one-half of 1 per cent on each \$1 of the amount of premium charged; for each policy of insurance or other instrument, by whatsoever name it may be called, whereby any insurance is made on any life or lives, 8 cents on each \$100 of the amount insured; for each policy of insurance or other instrument, by whatsoever name it may be called, by which insurance is made or renewed upon property of any description against peril by sea, or by fire or lightning, or other peril, one-half of 1 cent on each \$1 of the amount of premium charged. These corporations, unless they have money invested in Porto Rico, pay no general property tax.

(3) Every foreign corporation must pay an annual license fee of \$25 for the privilege of doing business in Porto Rico.

(4) In a few cases, where special franchises have been given to corporations to perform quasi-public services, such as the operation

of the street railway or the furnishing of electric light or power, provision has been made in the franchises granted to them for the payment to the insular government of a percentage of the gross receipts, as a franchise tax.

To meet the demand for information as to the corporation laws of the island the secretary of Porto Rico has published a pamphlet, which is mailed free on request.

FINANCE.

The financial affairs of the insular government are in charge of the treasury department of Porto Rico, except those relating to examination and audit of accounts, which are performed in the office of the auditor of Porto Rico. In the treasury department are thus concentrated the functions usually performed in the several commonwealths in the United States by a number of different officers, such as the treasurer proper, assessor of taxes, collector of taxes, commissioner of banks and corporations, etc. The treasurer also performs important functions in respect to the supervision of the administration of financial affairs by the municipalities. In virtue of provisions of the municipality law, it is his duty to prescribe a uniform system for the keeping of books of account, deposit of all moneys, the making of all disbursements by the municipalities of the island, and to require from them uniform annual and other reports, setting forth in detail their financial transactions. When duly authorized by the governor, it is also his duty, himself or by deputy, to examine into the financial operations of any municipality.

For the performance of its various duties the treasury department is organized into five bureaus: Office of the treasurer; bureau of accounts; bureau of internal revenue; bureau of municipal finance; bureau of disbursements. In addition to its office force the department employs 28 internal-revenue agents, 21 of whom devote their attention to the inspection of establishments handling goods subject to excise taxes.

INSULAR REVENUE SYSTEM.

The present revenue system of the insular government was created by an act passed at the first session of the first legislative assembly of Porto Rico, approved January 31, 1901. This act was subsequently amended in certain particulars, but its fundamental principles remain unchanged. In pursuance of this act the insular government derives its revenue from the following sources:

(1) Excise taxes, which are paid by the purchase, affixture, and proper cancellation of internal-revenue stamps. These taxes are imposed chiefly on liquors, tobacco, and matches, and on the execution of certain legal documents.

(2) A general property tax of 0.15 of 1 per cent on all real and personal property, except that dedicated to religious and educational purposes, certain household goods, etc.

(3) A collateral inheritance tax varying according to the amount inherited and the degree of kinship.

(4) Special taxes on insurance companies, in lieu of the payment of the general property tax.

(5) Customs receipts, less expense of collection.

(6) Miscellaneous receipts, the most important of which are the 2 per cent interest paid by the depositories of insular funds on moneys held by them belonging to the insular government; license fees from foreign corporations for the privilege of transacting business in Porto Rico; royalties from companies enjoying franchises or special privileges; court fees and fines, and fees collected by the registrars of property.

The following condensed statement taken from the report of the governor of Porto Rico for the fiscal year 1906 shows, in brief, the condition of the finances for that year:

RECEIPTS AND EXPENDITURES OF THE INSULAR TREASURY OF PORTO RICO FROM JULY 1, 1905, TO JUNE 30, 1906.

Receipts.

INSULAR REVENUES.		Dollars.
Customs receipts.....	716,111.20	
Internal-revenue receipts.....	2,444,719.51	
Miscellaneous receipts from sundry sources.....	197,071.91	
Total insular revenues deposited.....	3,357,902.62	
Repayments.....	177,200.00	
Transfers to insular revenues from trust funds.....	10,099.41	
Total deposits and repayments of insular revenues.....	3,545,202.03	Dollars.

TRUST FUNDS.

	Dollars.	
Trust funds deposited.....	341,648.49	
Repayments to trust funds.....	15,976.65	
Total trust-fund deposits and repayments.....	357,625.14	
Transfers from insular revenues.....	14,987.53	
Total trust-fund deposits, repayments, and transfers.....	372,612.67	Dollars.
Total deposits, transfers, and repayments from July 1, 1905, to June 30, 1906.....	3,917,814.70	
Balance on hand at close of business June 30, 1905.....	758,231.35	
Total receipts to be accounted for.....	4,676,046.05	

Expenditures.

AMOUNTS ADVANCED TO DISBURSING OFFICERS FROM INSULAR REVENUES.

	Dollars.
Total amount advanced for legislative expenditures.....	58,681.41
Total amount advanced for executive expenditures.....	2,091,928.36
Total amount advanced for judicial expenditures.....	302,946.47
Total amount advanced from insular revenues.....	2,453,556.24
Payment of sundry claims on settlements.....	1,088,237.27
Transfers from insular revenues to trust funds.....	14,987.53
Total amount paid from insular revenues.....	3,556,781.04

AMOUNTS ADVANCED TO DISBURSING OFFICERS FROM TRUST FUNDS.

	Dollars.
Treasury department.....	1,846.67
Department of the interior.....	92,826.74
Advanced to University of Porto Rico.....	17,588.74
Department of education.....	64,433.36
Department of health, charities, and correction.....	325.00
Advanced to municipality of Aguas Buenas.....	106.54
Total amount advanced from trust funds.....	177,127.05
Payment of sundry claims on settlements.....	308,056.81
Transfers to insular revenues.....	15,774.74
Total amount paid from trust funds.....	500,958.60
Total expenditures, July 1, 1905, to June 30, 1906.....	4,057,739.64
Total receipts to be accounted for.....	4,676,046.05
Total expenditures.....	4,057,739.64
Balance on hand June 30, 1906.....	618,306.41
Made up as follows:	
Insular revenues.....	405,215.18
Trust funds.....	213,091.23
	618,306.41

Decrease in balance of insular revenues:	Dollars.
Balance of insular revenues, June 30, 1905.....	416,794.19
Balance of insular revenues, June 30, 1906.....	405,215.18
Decrease in balance of insular revenues during the fiscal year 1906.....	11,579.01
Decrease in balance of trust funds:	
Balance of trust funds, June 30, 1905.....	341,437.16
Balance of trust funds, June 30, 1906.....	213,091.23
Decrease in balance of trust funds during the fiscal year 1906.....	128,345.93

In a letter accompanying the circular relating to the \$1,000,000 four per cent bond issue of the Porto Rican government, the treasurer of the island recapitulates the receipts and expenditures of the insular government during the last five fiscal years as follows:

NET RECEIPTS AND EXPENDITURES OF THE INSULAR GOVERNMENT
PROPER OF PORTO RICO DURING THE FISCAL YEARS ENDED JUNE
30, 1902 TO 1906.

ITEM.	1902	1903	1904	1905	1906
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Balance on hand at beginning of year.....	74,631.41	314,600.40	344,310.58	332,695.87	500,604.23
Net receipts during the year.....	2,423,130.73	2,473,748.05	2,345,965.97	2,520,272.84	2,554,554.14
Total.....	2,497,762.14	2,788,348.45	2,690,276.55	2,852,968.71	3,055,158.37
Net expenditures during the year.....	2,183,161.74	2,444,037.87	2,357,580.68	2,352,364.48	2,527,135.89
Balance on hand at end of year (accounted for as below).....	314,600.40	344,310.58	332,695.87	500,604.23	^a 528,022.48
Cash on hand at end of year.....	314,600.40	344,310.58	332,695.87	384,489.57	370,758.93
Due from municipalities and school boards on account of short time loans.....				116,114.66	157,263.55
Total.....	314,600.40	344,310.58	332,695.87	500,604.23	528,022.48

^a On October 30, 1906, the corresponding figure (surplus in the insular treasury) was \$867,781.60.

ASSESSABLE PROPERTY AND TAX COLLECTION.

The first assessment of property, made in 1901, was made by a special force of assessors; that of 1902 and the corrections in 1903 by the internal-revenue agents, which results not only in economy but also in greater efficiency, inasmuch as the force is thus kept familiar with values of properties, and assessments are made with greater uniformity.

For the collection of property taxes the island is divided into sixty collection districts, with a collector or deputy collector in charge of each. Tax receipts are made out in the treasury department at San Juan and to each collector is sent a bound volume of receipts for the taxes due in his district. All moneys received by collectors must be deposited at frequent intervals in one of the depositories of insular funds. These depositories are at present the American Colonial Bank, the First National Bank of Porto Rico, and the Banco Territorial y Agrícola de Puerto Rico. The treasury department itself receives and handles no cash, but makes all payments by draft or check on these depositories. By this means the treasurer is relieved from the responsibility of the actual handling of cash, no money is ever withdrawn from circulation, and the revenue is increased by the 2 per cent interest paid by the depositories.

The following statement shows the amount of money in the custody of the treasurer on June 30, 1906, and the institutions in which it was deposited, also the amount due from municipalities and school boards on account of loans made to them from the insular treasury:

	Dollars.
To the credit of insular revenues.....	405,215.18
To the credit of trust funds.....	213,091.23
Total.....	618,306.41
Deposited with—	
American Colonial Bank of Porto Rico.....	338,306.41
First National Bank of Porto Rico.....	200,000.00
Banco Territorial y Agrícola de Puerto Rico.....	50,000.00
Total.....	618,306.41
Due from municipalities and school boards on account of loans made to them.....	157,263.55

Each collector and deputy collector is bonded to the people of Porto Rico for the faithful accounting for all moneys coming into his hands. The positions of collectors have invariably been filled by native Porto Ricans. Taxes are payable twice a year, on July 1 and January 1 of each fiscal year, and become overdue if not paid within sixty days thereafter. Corporations are in general taxed on the same basis as individuals, but the assessment of their property is made directly by the treasurer of the island. There are about 60,000 taxpayers on the island.

ASSESSED VALUE OF PROPERTY OF PORTO RICO, FISCAL YEARS
ENDED JUNE 30, 1902 TO 1906.^a

YEAR.	Assessed value.	YEAR.	Assessed value.
	<i>Dollars.</i>		<i>Dollars.</i>
1902.....	94,325,001	1905.....	94,609,766
1903.....	94,833,700	1906.....	99,624,776
1904 ^b	90,421,027		

^a As stated by Hon. W. F. Willoughby, treasurer of Porto Rico.

^b The decrease in the assessed value of property indicated for 1904 was due to the change in the law by which the assessment and taxation of credits was discontinued.

The municipalities of the island have the power of imposing a general property tax of 0.85 of 1 per cent on property within their districts. Of the money thus collected, the treasurer of Porto Rico retains and pays over to the local school board 20 per cent, and to the municipal government for road maintenance 8 per cent, the municipalities thus receiving for their free use 72 per cent. The municipalities also have the power to levy a special school tax of not to exceed 0.1 of 1 per cent. Those municipalities which have contracted bonded indebtedness must also impose a further tax sufficient to produce the sum required to meet the interest and sinking fund charges. These taxes are levied on property as assessed by the insular government, and the treasury department has in all cases assumed the burden of making out the tax receipts and collecting the taxes. A great economy is thus effected in avoiding the employment of two sets of collection officials, and the convenience of the taxpayer is served by his having to deal with only one tax office. All receipts on account of such municipal taxes are treated as special trust funds and are paid over monthly to the municipalities. The cost of collection is borne by the insular government.

CUSTOMS TARIFF.

Customs dues are collected by the Federal collector of customs, who in accordance with act of Congress approved March 24, 1900, turns them over to the insular government, after deducting the cost of collection.

The question of the Porto Rican tariff occupied the attention of the American Government from the moment of the landing of the American troops at Guanica on July 21, 1898. The island was then under a tariff proclaimed by royal decree of April, 1892, during the reciprocity treaty with the United States. Reciprocity came into effect on September 1, 1891. Under it, up to July 1, 1892, goods from the United States were admitted under a "transitory schedule;" after July 1 they were admitted under Schedules A, B, C, and D, the first of which contained a long list of articles admitted free, the others granting reductions of 50 and 25 per cent. When reciprocity came to an end, on August 27, 1894, the general Spanish tariff of April, 1892, was applied to the trade with the United States. That tariff contained two columns, the first relating to countries having no commercial understanding with Spain, the second relating to countries having such an understanding. Goods from the United States came in under the rates of the second column; goods from Spain paid a temporary tax equal to 10 per cent of the duties of the second column, the trade between Spain and Porto Rico being practically coastwise, on the theory that Porto Rico was a province of Spain, having been declared such on August 28, 1870.

The protocol signed at Washington August 12, 1898, having provided for the cession of Porto Rico to the United States, the adoption of a tariff law for the island became necessary. Accordingly, on August 19, the President, through the Secretary of War, issued a "tariff of duties and taxes, to be levied and collected as a military contribution." This tariff was in the main the minimum Spanish tariff of the second column—that is to say, leaving the duties on imports from the United States practically unchanged and applying them also to foreign goods. Export duties were retained on coffee (1 peso per 100 kilograms), wood (15 centavos on 100 kilograms), and tobacco (22 centavos on 100 kilograms). An amended tariff was promulgated by Presidential order dated January 20, 1899, to become effective on February 1. It constituted on the whole a great reduction of the previous duties, and it abolished the export duties by simply omitting to mention them. It was modified during the military administration by various "tariff circulars" issued by the War Department.

The organic act establishing the present civil government of Porto Rico (known as the Foraker Act), approved April 12, 1900, and taking effect May 1 of that year, provided that the duty on foreign goods entering Porto Rico should be the same as that on foreign goods entering the United States; that goods shipped from the United States to Porto Rico or from Porto Rico to the United States should pay 15 per cent of the duty on foreign goods; that on all coffee imported into Porto Rico a duty of 5 cents per pound should be paid; that works printed in Spanish should be admitted into Porto Rico free for a period of ten years; that all books and pamphlets printed in English should be admitted free when imported from the United States, and that goods admitted free into the United States should be admitted free also into Porto Rico. The law also provided that all duties on articles imported into Porto Rico from the United States, and vice versa, should cease as soon as the legislative assembly of Porto Rico should have put in operation a system of taxation sufficient to defray the expenses of the insular government, and that in any case there should be free trade between the United States and Porto Rico after March 1, 1902. It further provided that the duties collected in Porto Rico under this act and the duties collected in the United States on goods coming from Porto Rico should not be covered into the United States Treasury, but should be held as a separate fund and placed at the disposal of the President to be used for the benefit of Porto

Rico, and that, when the civil government of Porto Rico had been organized, said money should be turned over to the insular treasury.

The legislative assembly of Porto Rico having notified the President by resolution dated July 4, 1901, that a system of taxation sufficient to defray the expenses of the insular government had been put in operation, he made proclamation to that effect on July 25, and since that date there has been free trade between the island and the United States. The organic act also provided (proviso to sec. 4) that after said Presidential proclamation all duties and taxes collected under the provisions of the act should be paid into the treasury of Porto Rico, to be expended for the benefit of the island, instead of being paid into the Treasury of the United States.

When through the exchange of ratifications of the treaty of peace on April 11, 1899, Porto Rico became foreign territory to Spain it became ipso facto subject to the maximum Spanish tariff. At the same time the commercial treaty between Spain and France ceased to be applicable to Porto Rico, and accordingly the island became subject also to the maximum French tariff. The effect of this sudden blocking of the accustomed channels of trade has been noticed in connection with coffee.

An effect of opposite tendency was produced by the reciprocity treaty between the United States and Cuba, which went into effect on December 27, 1903, providing for a 20 per cent reduction of the duty on all unenumerated dutiable articles and a 40 per cent reduction on cattle imported into Cuba. The effect of this treaty appears in the following table:

EXPORTS OF COFFEE AND CATTLE FROM PORTO RICO TO CUBA,
FISCAL YEARS ENDED JUNE 30, 1901 TO 1906.

YEAR.	Coffee.		Cattle.	
	Quantity.	Value.	Quantity.	Value.
	<i>Pounds.</i>	<i>Dollars.</i>	<i>Number.</i>	<i>Dollars.</i>
1901.....	4,633,538	633,125	10,446	353,525
1902.....	2,678,700	293,256	11,215	264,068
1903.....	3,534,023	345,489	8,887	173,564
1904.....	4,060,038	411,770	11,817	256,323
1905.....	6,242,120	760,221	7,021	154,087
1906.....	11,739,124	1,376,175	6,588	127,472

In the fiscal year 1904, in the second half of which the reciprocity treaty had been in force, its effects became apparent. Coffee exports rose at once with a bound, until in 1906 they were nearly four times as large as in 1903. Of the total exports of coffee from Porto Rico, which in 1906 amounted to 28,390,000 pounds (including shipments made to the United States), Cuba thus took considerably more than one-third, and nearly twice as much as Spain, the next largest customer. In the case of cattle, too, the advent of reciprocity seemed to inaugurate an increase of exports, but this has fallen off again, doubtless because Porto Rico needs its cattle for the growing sugar industry.

By agreement signed at Washington August 20 and proclaimed August 22, 1902, it was "agreed on the part of the French Republic that coffee the product of Porto Rico shall enjoy until the 23d day of February, 1903, the benefit of the minimum customs tariff of France on that article." (See Treasury Decision 23954.) This arrangement was continued by comity beyond the date set for its termination, but on April 16, 1907, the French minister of finance issued a decree applying the maximum tariff to coffee from Porto Rico and also to that coming from United States ports, to take effect after June 30. This means that, unless the effect of the decree be forestalled by negotiation, the Porto Rican coffee sent to France (5 million pounds, or over one-sixth of the total coffee exports in the fiscal year 1906) will have to pay a duty of 26.3 cents per pound, instead of 11.9 cents as heretofore.

INSULAR BONDED DEBT.

Porto Rico was fortunate in starting its autonomous life unburdened by debt. Not only was this the case, but the treasury of Porto Rico had been called on from time to time during more than thirty years preceding the American occupation to advance money to Cuba. These advances aggregated more than \$4,000,000, of which, after partial repayments, there remained in 1900 an unpaid balance of \$2,253,516.55. As this debt, however, had been incurred by the Spanish Government for the purpose of suppressing the Cuban revolution, it is not likely that the Cuban Government will recognize it.

By act approved March 8, 1906, amended by act approved February 13, 1907, the legislative assembly of Porto Rico authorized the issue of 4 per cent gold bonds to the amount of \$1,000,000, the proceeds to be used in road construction. The act provides that the bonds shall be sold at not less than par, shall run for a period of not to exceed twenty years, and that a special tax on property of 0.1 of 1 per cent shall be collected for the purpose of realizing funds with which to meet the interest as it falls due and the payment of the bonds upon their maturity.

According to statement issued by J. & W. Seligman & Co., of New York, fiscal agents of the loan, the bonds will be dated January 1, 1907, and purchasers will be required to deposit, besides the amount bid, the interest accruing between January 1 and April 8, 1907. The bonds will be issued in twenty series of \$50,000 each, maturing annually, the first series on January 1, 1908, the last series on January 1, 1927. Principal and semiannual interest will be payable in gold coin of the United States of the present standard of weight and fineness, at the office of the fiscal agents in New York. The bonds will be issued in coupon form for \$1,000 each. Registered bonds, but only in the denomination of \$5,000, will be issued in exchange for the like face amount of coupon bonds of the same series. Registered bonds will be transferable in New York at the office of the fiscal agents of the loan, where coupon bonds must also be presented for conversion into registered bonds.

The act of the legislative assembly provides that the bonds shall be exempt from the payment of taxes of any kind whatsoever of the government of the island of Porto Rico or of any local authority therein.

The United States Treasury Department authorizes the statement that it will accept these bonds as security for public deposits on precisely the same conditions as the Philippine bonds, to wit, that the Department will accept the 4 per cent gold Porto Rico bonds at par as security for public deposits, should further deposits be made, and permit them to be substituted for Government bonds now held as security for deposits, on condition that the Government bonds thus released be used as security for additional circulation whenever in the judgment of the Secretary of the Treasury it is desirable to stimulate an increase in national-bank circulation.

The bonds were allotted to the six successful bidders on April 8, 1907, at prices varying from \$100.313 (for \$100 face value) for the first \$50,000 worth of bonds due in January, 1908, to \$113.340 for \$20,000 of the last \$50,000 due in January, 1927.

TOTAL PUBLIC INDEBTEDNESS OF PORTO RICO, JUNE 30, 1906.^a

	Bonded indebtedness.	Floating and all other indebtedness.	Total indebtedness.	Cash on hand and in sinking funds.	Net debt, less cash on hand and in sinking funds.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Insular government.....	1,000,000.00	.....	1,000,000.00	370,758.93	629,241.07
Municipalities.....	1,100,000.00	233,246.74	1,333,246.74	266,757.57	1,066,489.17
School boards.....	.....	69,715.35	69,715.35	43,878.24	25,837.11
Total.....	2,100,000.00	302,962.09	2,402,962.09	681,394.74	1,721,567.35
Less amount due insular government by municipalities.....	.....	.....	.....	.....	157,263.55
Balance of net debt.....	.....	.....	.....	.....	1,564,303.80

^a Includes issue of \$1,000,000 of bonds of insular government.

DEBT OF MUNICIPALITIES.

Unlike the insular government, the municipalities have largely been burdened with debt, arising from the fact that they were in the habit of authorizing in their annual budgets expenditures in excess of the receipts that could reasonably be anticipated. This had gone on to such an extent that at the beginning of the civil government many of the municipalities were in a state of practical bankruptcy. The floating indebtedness of San Juan, Arecibo, Mayaguez, and Ponce was paid off from the proceeds of the bonds sold by those municipalities, bearing date of January 1, 1902. To meet the needs of the other municipalities an act was passed providing that such municipalities might pay off their indebtedness outstanding June 30, 1902, by certificates of indebtedness, redeemable in five years. This was generally done, and certificates to the amount of \$103,129.29 were issued. Of this sum, \$66,614.76 had been paid on June 30, 1905, leaving a balance of \$36,514.39 in unpaid certificates to be redeemed in two years.

Unfortunately the municipalities continued to incur new obligations in excess of receipts, with the result that their aggregate indebtedness, which had amounted to \$501,128.15, reduced in 1902 to \$418,164.73, and largely extinguished in 1903, was swelled once more to \$262,508.96 in 1903 and to \$284,186.41 in 1904.

To remedy this state of affairs, the insular government in 1904 passed an act authorizing advances from the insular treasury to the municipalities to pay off their floating indebtedness or undertake works of improvement, care being taken that the municipal budgets should be so framed as to insure the payment of 3 per cent interest on the loan and repayment of one-fifth of the principal each year. As the insular government itself collects the municipal taxes, retaining whatever sums may be due to the insular treasury and turning the remainder over to the municipalities, the repayment of these advances is absolutely secure. Under this law, the following advances have been made:

INSULAR LOANS TO MUNICIPALITIES AND SCHOOL BOARDS, FISCAL YEARS 1905 AND 1906.

MUNICIPALITIES.

No.	MUNICIPALITY OR BOARD.	Date of loan.	Purposes for which granted.		Amount of loan.	Amount outstanding June 30, 1906.
			Payment of indebtedness.	Public improvements.		
			Dollars.	Dollars.	Dollars.	Dollars.
1	Fajardo.....	July 16, 1904	2,800.00	.....	2,800.00	1,672.87
2	Aguas Buenas.....	July 19, 1904	4,311.67	.....	4,311.67	2,577.73
3	Comerio.....	.....do.....	2,500.00	.....	2,500.00	1,493.05
4	Ponce.....	Sept. 14, 1904	35,000.00	.....	35,000.00	20,844.77
5	Vega Baja.....	Oct. 19, 1904	3,000.00	.....	3,000.00	1,671.27
6	Yauco.....	.....do.....	11,772.25	.....	11,772.25	7,084.62
7	Sabana Grande.....	Dec. 1, 1904	3,644.27	.....	3,644.27	2,183.35
8	Bayamon.....	Jan. 23, 1905	6,420.72	.....	6,420.72	3,829.38
9	San Sebastian.....	.....do.....	8,669.42	.....	8,669.42	5,029.39
10	Mayaguez.....	Mar. 28, 1905	12,000.00	.....	12,000.00	9,669.37
11	San Juan.....	Mar. 15, 1905	2,500.00	.....	2,500.00	.....
12	Vieques.....	May 22, 1905	.....	3,000.00	3,000.00	.....
Total, 1905.....			92,618.33	3,000.00	95,618.33	56,055.80
13	Vega Alta.....	Aug. 12, 1905	1,000.00	.....	1,000.00	749.07
14	Adjuntas.....	Aug. 31, 1905	14,922.44	77.56	15,000.00	11,893.13
15	Rincon.....	.....do.....	2,643.49	.....	2,643.49	2,006.05
16	Aguadilla.....	Sept. 20, 1905	5,943.79	6,056.21	12,000.00	9,502.62
17	Naguabo.....	.....do.....	108.81	2,891.19	3,000.00	2,372.09
18	San Juan.....	Sept. 26, 1905	.....	15,000.00	15,000.00	.....
19	Arroyo.....	Mar. 8, 1906	.....	4,200.00	4,200.00	4,200.00
20	Coamo.....	Apr. 10, 1906	.....	2,000.00	2,000.00	2,000.00
21	Lares.....	.....do.....	.....	12,000.00	12,000.00	12,000.00
22	Juana Diaz.....	Apr. 17, 1906	1,950.03	4,049.97	6,000.00	6,000.00
23	Patillas.....	.....do.....	.....	2,000.00	2,000.00	2,000.00
24	Toa Baja.....	May 31, 1906	.....	1,500.00	1,500.00	1,500.00
25	Aguada.....	June 23, 1906	114.16	3,885.84	4,000.00	4,000.00
26	Aibonito.....	.....do.....	558.00	9,442.00	10,000.00	10,000.00
Total, 1906.....			27,240.72	63,102.77	90,343.49	68,312.96
Total, 1905 and 1906.....			119,859.05	66,102.77	185,961.82	124,368.76

INSULAR LOANS TO MUNICIPALITIES AND SCHOOL BOARDS, FISCAL YEARS 1905 AND 1906—Continued.

SCHOOL BOARDS.

No.	MUNICIPALITY OR BOARD.	Date of loan.	Purposes for which granted.		Amount of loan.	Amount outstanding June 30, 1906.
			Payment of indebtedness.	Public improvements.		
			Dollars.	Dollars.	Dollars.	Dollars.
1	Adjuntas.....	July 16, 1904	980.00		980.00	
2	Aguada.....	do	408.00		408.00	
3	Aguadilla.....	do	750.00		750.00	
4	Aguas Buenas.....	do	355.00		355.00	
5	Anasco.....	do	806.00		806.00	
6	Arecibo.....	do	1,411.00		1,411.00	
7	Barros.....	do	348.00		348.00	
8	Bayamon.....	do	672.00		672.00	
9	Camuy.....	do	1,000.00		1,000.00	
10	Cayey.....	do	734.00		734.00	
11	Ciales.....	do	323.33		323.33	
12	Comerio.....	do	925.00		925.00	551.63
13	Fajardo.....	do	182.00		182.00	
14	Lajas.....	do	550.00		550.00	
15	Las Marias.....	do	675.00		675.00	
16	Maricao.....	do	216.00		216.00	
17	Mayaguez.....	do	3,680.00		3,680.00	2,301.62
18	Morovis.....	do	600.00		600.00	365.76
19	Naguabo.....	do	492.00		492.00	
20	Patillas.....	do	394.00		394.00	
21	Ponce.....	do	1,000.00		1,000.00	
22	Sabana Grande.....	do	425.00		425.00	
23	San Lorenzo.....	do	800.00		800.00	
24	Utando.....	do	862.00		862.00	
25	Vega Baja.....	do	208.00		208.00	
26	Manati.....	Oct. 3, 1904	700.00		700.00	
Total, 1905.....			19,496.33		19,496.33	3,219.01
27	Aguada.....	Aug. 31, 1905		1,000.00	1,000.00	658.13
28	Arecibo.....	do	196.00	900.00	1,096.00	721.07
29	Aguadilla.....	Sept. 20, 1905	1,500.00		1,500.00	983.44
30	Anasco.....	Oct. 6, 1905	2,000.00		2,000.00	1,579.37
31	Sabana Grande.....	do	1,200.00		1,200.00	947.84
32	San German.....	do	2,000.00		2,000.00	1,579.76
33	Manati.....	Oct. 11, 1905	1,200.00		1,200.00	947.24
34	Camuy.....	Nov. 8, 1905	3,000.00		3,000.00	2,531.46
35	Hatillo.....	do	3,000.00		3,000.00	2,727.47
36	Lares.....	Mar. 31, 1906	5,000.00		5,000.00	5,000.00
37	Coamo.....	Apr. 10, 1906	6,000.00		6,000.00	6,000.00
38	Rio Piedras.....	do	3,500.00		3,500.00	3,500.00
39	Maguabo.....	Apr. 17, 1906	1,000.00		1,000.00	1,000.00
40	Toa Baja.....	May 31, 1906	1,500.00		1,500.00	1,500.00
Total, 1906.....			5,896.00	27,100.00	32,996.00	29,675.78
Total, 1905 and 1906.....			25,392.33	27,100.00	52,492.33	32,894.79

Twenty-five municipalities out of the sixty-six closed the fiscal year 1906 with no outstanding floating indebtedness, and seven others had an indebtedness of less than \$100 each.

The four municipalities of San Juan, Ponce, Mayaguez, and Arecibo, which on January 1, 1902, incurred bonded indebtedness to a total amount of \$1,100,000 (San Juan \$600,000, Ponce \$200,000, Mayaguez \$200,000, Arecibo \$100,000), have been able to meet all payments of interest and deposits to sinking funds, and on June 30, 1906, had on hand the following balances with which to meet future charges:

	Dollars.		Dollars.
San Juan.....	28,029.44	Mayaguez.....	9,240.21
Ponce.....	11,810.78	Arecibo.....	7,299.11

The money standing to the credit of the sinking funds is deposited with the American Colonial Bank of Porto Rico, where it earns interest at 3.3 per cent, compounded semiannually.

In the four years since the system of uniform accounting and reporting to the treasurer of Porto Rico has been in force, the available income of the municipalities has increased by nearly half a million dollars. The actual receipts of all the municipalities during the fiscal years 1903 to 1906, inclusive, were as follows:

	Dollars.		Dollars.
1903.....	1,113,237.35	1905.....	1,338,045.48
1904.....	1,139,364.70	1906.....	1,606,983.10

These figures are exclusive of the amounts received by the municipalities in the way of loans from the insular treasury. It will be seen that the increase in receipts was especially great during the fiscal year 1906, such increase amounting to \$268,937.62.

The increased receipts obtained from the general property tax are responsible for the greater part of this increase, although the municipalities received a larger income in 1906 than in the preceding year from almost every one of their sources of income.

CURRENCY AND BANKING.

RETIREMENT OF PORTO RICO MONEY.

Unlike the Philippines, Porto Rico has no special system of currency, the money in circulation being that of the United States. This is in accordance with the organic act, which, in section 11, provided as follows:

That for the purpose of retiring the Porto Rican coins now in circulation in Porto Rico and substituting therefor the coins of the United States, the Secretary of the Treasury is hereby authorized to redeem, on presentation in Porto Rico, all the silver coins of Porto Rico known as the peso and all other silver and copper Porto Rican coins now in circulation in Porto Rico, not including any such coins that may be imported into Porto Rico after the first day of February, nineteen hundred, at the present established rate of sixty cents in the coins of the United States for one peso of Porto Rico coin, and for all minor or subsidiary coins the same rate of exchange shall be applied. The Porto Rican coins so purchased or redeemed shall be recoined at the expense of the United States, under the direction of the Secretary of the Treasury, into such coins of the United States now authorized by law as he may direct, and from and after three months after the date when this act shall take effect no coins shall be a legal tender, in payment of debts thereafter contracted, for any amount in Porto Rico, except those of the United States; and whatever sum may be required to carry out the provisions hereof, and to pay all expenses that may be incurred in connection therewith, is hereby appropriated, and the Secretary of the Treasury is hereby authorized to establish such regulations and employ such agencies as may be necessary to accomplish the purposes hereof: *Provided, however*, That all debts owing on the date when this act shall take effect shall be payable in the coins of Porto Rico now in circulation, or in the coins of the United States at the rate of exchange above named.

In accordance with this law, Treasury agents went to Porto Rico in 1900 and up to August of that year redeemed Porto Rican money amounting to 4,862,798.30 pesos, leaving in Porto Rico the proportionate amount of American coin. On the return of the Treasury agents to the United States, Messrs. De Ford & Co., bankers, of San Juan, were appointed to continue the redemption, and by May 1, 1901, had redeemed 266,343.38 pesos, making a total retirement of 5,129,141.68 pesos, equivalent in United States currency to \$3,077,485.08. In 1896 it was ascertained that the money in circulation in Porto Rico amounted to 6,646,000 Porto Rican pesos. As a good deal of this was taken away by the Spanish soldiers, the 5,129,141.68 pesos retired in 1900 and 1901 no doubt represented practically the entire circulation.

The proper method of effecting the transition from the Porto Rican currency to that of the United States became the subject of active discussion as soon as it was known that the island was to come under American sovereignty. The bullion value of the Porto Rican peso at that time was about 40 cents gold, while its exchange value in November, 1898, was 60 cents. The exchange value had fluctuated constantly during the preceding ten years, though for the most part it had been considerably higher than 60 cents. Within six months it is recorded to have varied from 37 to 74 cents.

The mere substitution of one set of coins for another would have been a comparatively easy matter, but for the fact that there existed on the island debts amounting to some 43,000,000 pesos, all contracted in Porto Rican currency. So long as the rate of exchange between the Porto Rican peso and the United States dollar was left to the natural operation of the laws of exchange, the value of these debts, while fixed as expressed in pesos, fluctuated with the value of the peso as compared to the dollar. As the exchange rate fell, the value of the debts would increase; as the exchange rate rose, the debts would diminish in value. When, therefore, the question arose at what rate the Porto Rican pesos were to be redeemed by the United States Government, in order to be re-

placed with United States dollars, a choice had to be made between two sets of conflicting claims, those of the debtors and those of the creditors. The creditor class, mostly represented by the bankers, demanded that a high value be given to the peso, most of them recommending 75 cents, while some demanded 85 cents. The debtor class, on the other hand, consisting mostly of the owners of coffee and sugar plantations, recommended that the value of the peso be placed at 50 cents, some even at 40 cents—its bullion value at that time. The rate which the United States Government finally adopted, on recommendation of Mr. Robert P. Porter, special commissioner, was 60 cents for the peso. This rate was arrived at by taking the average of the rates of exchange for the preceding five years, leaving off the war period as abnormal. This rate at the same time represented a mean between the extremes demanded by the opposite parties.

The rate was fixed by the following Executive order:

EXECUTIVE MANSION, *January 20, 1899.*

It is hereby ordered that on and after February 1, 1899, and until otherwise provided, all customs, taxes, public and postal dues in the island of Porto Rico shall be paid in United States money, or in foreign gold coins, such as the Spanish alphonosinos (centen) and the French louis, which will be accepted in payment of such customs, taxes, public and postal dues, at the following rates:

	Dollars.
Alphonosinos (25-peseta piece)	4.82
Louis (20-franc piece)	3.86

It is further ordered that on and after February 1, 1899, and until further provided, the following Porto Rican or Spanish silver coins now in circulation in the island of Porto Rico shall be received for customs, taxes, public and postal dues, at the following fixed rates in United States money:

	Cents.		Cents.
The peso	60	The real	6
The medio peso	30	The medio real	3
The peseta	12		

It is further ordered and directed that out of the Porto Rican coins so received a convenient supply shall be retained and carried for exchange for United States money at the rate hereinbefore enumerated, namely, \$0.60 United States money for one Porto Rican silver peso.

It is further ordered that all existing contracts for the payment of money in the currency of Porto Rico may be discharged and paid in that money in accordance with the contracts, or in United States money at the relative value set forth in the above table, namely, for each \$100 United States currency, 166⅔ Porto Rican pesos.

Bronze and copper coins now current in the island of Porto Rico will be received at their face value for fractional parts of a dollar in a single payment to an amount not exceeding 12 cents (1 peseta).

WILLIAM MCKINLEY.

EFFECT OF RETIREMENT ON INDUSTRIAL CONDITIONS.

The period from February 1, 1899, to August 1, 1900 (three months after the date when the organic act went into effect) was allowed to prepare for the final retirement of the Porto Rican currency. Owing to the ignorance of some of the natives and the selfishness of others, the transition was accompanied by considerable hardship. The seller of coffee and sugar which went to foreign markets of course got no more for his goods in foreign gold than he did before the change in the currency. He naturally aimed, when paying wages or buying supplies in the island, to pay in American money merely the equivalents of what he had been accustomed to pay in Porto Rican money. To the laborer accustomed to receive 50 centavos a day he would pay only 30 cents of American money; for articles which had cost 1 peso, he would naturally try to pay only 60 cents, the actual equivalent of 1 peso.

The change would have been unaccompanied by any hardship if everybody had at once consented to the reduction in numerical figures, which was no reduction in actual value, since the value of 60 cents was the average of the value in the open market during the preceding five years, and since the rate of exchange was hovering about that value at the moment when the Executive order was issued. The hardship that it did entail arose from the fact that

some adopted the reduction while others did not. The merchants generally continued to demand the same prices in American money that they had charged in Porto Rican money; the fruit venders and other peddlers of small wares could not be made to understand that a Porto Rican medio was worth not 5 cents but only 3; bakers gave no larger loaf for an American cent than they had given for a Porto Rican centavo, though the exchange value of the latter was only 6 mills. To meet these higher prices the laborers naturally demanded correspondingly higher wages. In the sugar industry, to which the American occupation opened up a period of unabated boom, the laborers were generally able to exact these higher wages because of the great demand for their labor. In the coffee industry, which was prostrated about this time both through the loss of its principal markets and through the hurricane of August, 1899, not only was the demand for labor lessened, but the planters, impoverished themselves, were unable to pay more than before. Accordingly, while in the sugar industry the daily wage, formerly 50 to 55 Porto Rican centavos, is now 50 to 55 American cents, in the coffee industry the laborer who used to get 50 centavos now gets 30 cents. Under these circumstances the transition from one currency to another amounted almost to the contraction of the circulating medium to the extent of 40 per cent. Whether this hardship could have been avoided it is difficult to say; it certainly has been outweighed by the great benefit of a stable currency and the cessation of the perpetual fluctuations in the exchange.

MONETARY HISTORY.

A comparison with conditions existing before the Spanish-American war may under these circumstances be of interest. On May 5, 1857, by virtue of royal decree, the "macuquina" (cut coin) then in circulation in the island was called in and ordered to be exchanged for that of the Spanish peninsular stamp at a discount of 12½ per cent. The macuquina had been coined in Venezuela while that country was yet a Spanish colony. The Spanish Government sent 1,350,000 Spanish pesos to be exchanged for the macuquina, and the insular treasury had to cover the deficit of 215,466.40 pesos in order to complete the exchange, amounting to 1,565,466.40 pesos. In 1867 the copper coin of Santo Domingo was brought in, when Spain gave up that colony. In 1867, by royal decree, foreign money was allowed to circulate in the island at the following values in Spanish money: The United States \$20 gold piece equaled 38 escudos (380 reales vellon); the dollar equaled 19 reales; the French 20-franc gold coin equaled 76 reales vellon, the napoleon 19 reales vellon. Merchants, in order to keep the gold in the island, gave to the American eagle the value of 16½ pesos and to the Spanish doubloon the value of 17 pesos. The period up to 1879 was the best as regards monetary conditions. In 1879 a syndicate of European bankers bought all the then existing Government slave bonds, and was allowed to pay in Mexican silver dollars, these being admitted, by royal decree of February 22, 1879, to circulate in Porto Rico officially at a value equal to that of the United States silver dollar—that is, 95 centavos per peso, and the royal order of August 6, 1881, authorized their free circulation. As Mexican silver dollars elsewhere were rated much lower, they were imported into Porto Rico in large quantities. Gold was soon at a premium and slowly disappeared; the foreign exchange began to advance and Porto Rican merchants imported Mexican silver against their bills on London and New York. Until 1885 the rates of exchange fluctuated very little and did not advance over 10 per cent premium. But as the gradual fall in the world's value of silver began to render the importation of Mexican silver highly profitable, and as this was steadily followed by a further rise in the foreign exchange, the Spanish Government, with a view to maintaining all values in Porto Rico and regulating the course of the rates of exchange, issued, toward the end of 1886, a decree prohibiting the further importation of Mexican silver dollars, thus trying to limit the volume of circulating currency to the then existing amount. Only those Mexican dollars bearing the date of 1886 or earlier were considered henceforth as legal tender, and thus

the Porto Rican currency was theoretically made independent of the world's value of silver, and the rates of exchange dependent only on the law of supply and demand. In practice, however, the importation of Mexican dollars went on fraudulently, because, with a value elsewhere of 59 to 60 centavos, while in Porto Rico their commercial value was 100 centavos and their official value 95 centavos, the temptation to smuggle them into the island was irresistible, those with date of 1886 or earlier being selected for importation. When the United States began to buy \$4,500,000 of silver every month, resulting in a great advance in the price of silver, it became profitable to export Mexican dollars from Porto Rico instead of importing them, and the Porto Rican rates of foreign exchange declined to 8 to 10 per cent premium again. When the next decline in silver came, most of the Mexican dollars had been exported, and the volume of currency in Porto Rico was relatively small. The fraudulent importation was then resumed, but as it could increase the volume of the currency but slowly, the rate of foreign exchange was kept rather low for some years, and chiefly depended on supply and demand.

After 1891 the serious advance commenced, and from that time up to 1895 the average yearly level of exchange rose from 10 to 12 per cent each year, so that toward the end of 1895 it was over 50 per cent. The Spanish Government, unable to stop the fraudulent importation of Mexican silver, and wishing to prevent any further depreciation of property and values in Porto Rico, then resolved to create a special Porto Rico currency, and coined at the mints of Madrid and Seville the Porto Rico silver dollar, ordering (October 28, 1895) the exchange of the then circulating Mexican dollar for the new currency to be effected in the last ten days of 1895 at the rate of 95 cents of the new currency for the old Mexican dollar. Thus from January 1, 1896, the only legal currency in Porto Rico was the Porto Rican peso. The amounts brought in to replace the old currency were as follows: 5,561,000 Porto Rican silver peso pieces, 1,015,000 pesos' value in fractional silver money, 70,000 pesos' value in bronze coins; total 6,646,000 Porto Rican pesos.

The rate of foreign exchange in January, 1896, was about 48 per cent premium—that is to say, one United States dollar was worth 1.48 pesos of the new currency. In April, 1898, a dollar had reached the value of 1.70 pesos of Porto Rican currency, or 70 per cent premium. The bullion value would have represented about 130 per cent premium, so that at the beginning of the war, while the value of the Porto Rican peso in the foreign exchange was 56 cents in American currency, its bullion value was only 42 cents. The bullion value of the Porto Rican peso was a little less than the Mexican dollar and very nearly the same as that of the United States silver dollar. It was of the same weight and fineness as the Spanish dollar, differing only in having the words Porto Rico stamped on it instead of the word Spain, the intention being to give it free admission to Spain at a later date. It was not admitted at once because it was not known what quantity of money existed in Porto Rico. Exaggerated estimates were the cause of this regulation. The value of the Porto Rican peso for payments to the treasury, as compared with Spanish gold, was stipulated at 20 per cent.

These facts have to be kept in mind in interpreting the meaning of Porto Rican commercial statistics previous to 1899. The practice prevailing in Latin America of using the dollar mark (\$) for the various kinds of pesos as well as for the United States dollar (the United States in fact borrowed the sign from the Latin Americans) has often led to the erroneous assumption that the sums thus stated represent United States dollars, when in point of fact their value, from 1873 onward, owing to the fall of silver which dates from that year, varied as compared to the United States gold dollar. To obtain the true values it must be remembered that the unit of account in Porto Rico from 1879 to the end of 1895 was the Mexican peso, and from the beginning of 1896 to February 1, 1899, the Porto Rican peso and the figures given in the original statistics

must be recalculated by the aid of the rate of exchange at the respective dates.

The rates of exchange from 1879 to 1900, as furnished by the Chamber of Commerce of San Juan, are found on page 62.

BANKING.

The banking business of Porto Rico is performed by one unincorporated and eight regularly incorporated banking institutions, the names of which are given in the table on page 58, together with their financial condition at the close of business on June 30, 1905. Five of these were organized under the Spanish Government and four since the American occupation. In addition the more important commercial houses carry on some of the operations of banking, such as the buying and selling of exchange, acting as agents for the banking institutions proper, the receipts of deposits, etc.

The Banco de Puerto Rico (formerly known as the Banco Español de Puerto Rico) was organized by royal decree in 1888. The change in name was authorized by special resolution of Congress. This bank had conferred upon it the power of issuing its own notes to the amount of three times its paid-in capital. To secure this circulation and all sight deposits it is required to maintain a special reserve fund equal at all times in amount to the total of such deposits and notes in circulation, of which reserve no less than one-third must be in cash and the remainder in notes of preferred guaranty and sure collection running for not more than one hundred and twenty days. Owing to this special privilege enjoyed by the bank, its chief executive, the governor of the bank, is appointed by the governor of Porto Rico, though his compensation is paid by the bank. All changes in the by-laws of the bank must also receive the approval of the insular government. The charter of this bank expires on May 5, 1913.

The Banco Territorial y Agrícola was organized under the general provisions of the Code of Commerce on July 2, 1894, for a period of seventy-five years. It is modeled closely after the *Crédit Foncier* of France, and its business is largely confined to the making of loans for long terms secured by first mortgages on real estate. Under its constitution it has authority, of which it has availed itself, to issue mortgage bonds secured by the mortgages held by it. These bonds bear interest at the rate of 7 per cent.

The *Credito y Ahorro Ponceño* was organized on February 8, 1895, for a period of twenty-five years, and in addition to doing a general banking business conducts a savings department.

The *Caja de Economías y Préstamos de San German*, and the *Banco Popular*, of San Juan, are small institutions doing chiefly a savings-bank business for the receipt of small deposits.

The First National Bank of Porto Rico was organized in January, 1903, under charter No. 5484, with a paid-in capital stock of \$100,000.

The American Colonial Bank was incorporated under the laws of the State of West Virginia on April 4, 1899, and is the most important example of a purely commercial bank now doing business on the island.

The banking house of Luce, Crehore & Co. is an unincorporated private bank, at Ponce, having discontinued its San Juan office.

The J. T. Silva Banking and Commercial Company, though included in the list of banking institutions, has a peculiar status. It was incorporated on January 1, 1901, for a term of twenty-five years, and engages in both banking and ordinary commercial business. It is a leading example of the practice which has largely prevailed in the island of large firms engaging in both a banking and commercial business.

The treasurer of Porto Rico is given by the general revenue laws of the island the powers of a bank examiner, with authority to require regular reports from these institutions showing their financial condition at the close of each month and also to make such special examination of their condition at any time as he deems proper, with the usual power of causing appropriate action to be taken should the condition of an institution be found such that its continuance in operation would be unsafe.

COMMERCE.

Commerce, especially in a tropical country, is the barometer of prosperity. The Tropics, at present, are in the main producers of raw material and consumers of manufactures. What they produce for sale is not for the most part sent for consumption to other tropical countries, but to the great manufacturing countries of the Temperate Zone; what they buy is not the product of their neighbors, but the product of the Temperate Zone manufacturer.

Shipments from the United States to Porto Rico in the fiscal year 1906 aggregated \$19,224,881, and shipments from Porto Rico to the United States aggregated \$19,142,461. The entire exports of the United States to South America in 1906 amounted only to \$75,159,781, so that the exports of the United States to the little island of Porto Rico, 3,435 square miles in extent, were something over one-fourth as much as to the continent of South America, 7,500,000 square miles in extent. In the last year under Spanish rule the United States sent to Porto Rico barely 2 million dollars' worth of its products. In the year ended June 30, 1906, out of the total of \$21,827,665 worth of shipments into Porto Rico, \$19,224,881 worth came from the United States.

Sugar (\$14,184,722), tobacco and manufactures thereof (\$3,566,540), and coffee (\$3,496,082), making a total of \$21,247,344, formed 91.36 per cent of the total shipments from Porto Rico to the United States and foreign countries in the fiscal year 1906. Evidently, so far as its exports are concerned, Porto Rico belongs decidedly to the class of tropical countries catering to the markets of the Temperate Zone. The one notable exception to this rule is in the case of coffee, about 40 per cent of the Porto Rican coffee going to Cuba, itself a tropical country. This, however, is largely a result of artificial creation, due to the 20 per cent reduction in duty granted by Cuba to coffee imports from Porto Rico. It is to be noted, moreover, that of the exports other than sugar, tobacco, and coffee, a large proportion are of the nature of luxuries furnished exclusively by tropical or semi-tropical countries. Among imports, on the other hand, luxuries figure to a very small extent, the bulk of the imports being such necessities as rice, breadstuffs, meat and dairy products, fish, cotton cloths, and various manufactures of iron and wood.

In the recent history of Porto Rican commerce the most salient fact is the complete reversal of the relative positions of the United States and foreign countries. This is shown in the following table:

SHARE OF THE UNITED STATES IN THE TRADE OF PORTO RICO.

YEAR.	Share of imports.	Share of exports.	Share of total trade.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
1895.....	22.59	19.99	21.32
1905.....	84.51	83.56	84.00
1906.....	88.08	82.31	85.10

The change was due, of course, to the removal of the tariff barrier between Porto Rico and the United States, while the trade between Porto Rico and Spain and Cuba, formerly free, became subject to tariff after the American occupation. In detail, year by year, the change is shown in the table on page 63.

Another noticeable point is the rapidity with which the commerce of the island recovered from the effects of the war, surpassing the record of 1897 in 1902 and beating the highest ante-bellum record—that of 1892—in 1903, since which time that highest figure of Spanish times has been nearly doubled. The low figure for 1900 was doubtless due not so much to the effects of the war as to the hurricane of 1899, which prostrated the coffee industry. These facts, together with the boom in the coffee trade from 1890 to 1897 and the brief depression during the year of the war, 1898 (for which no complete records have been published), and the three following years, are exhibited in the following table:

WORLD'S COMMERCE WITH PORTO RICO AND SHARE OF THE UNITED STATES THEREIN, 1887 TO 1906.

YEAR.	World's commerce with Porto Rico.	United States commerce with Porto Rico.	Share of United States.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Per cent.</i>
1887.....	16,952,560	5,932,347	35
1888.....	21,292,070	5,371,336	25
1889.....	19,789,368	5,332,878	27
1890.....	23,253,932	5,102,642	22
1891.....	21,476,278	4,790,583	22
1892.....	26,661,760	6,104,010	28
1893.....	23,995,285	5,099,175	21
1894.....	23,583,735	4,643,537	20
1895.....	19,061,849	4,063,289	21
1896.....	23,552,488	4,196,803	18
1897.....	21,881,526	4,169,912	19
1898.....	.....	3,920,302	.....
1899.....	19,962,457	7,411,926	37
1900.....	16,602,004	10,302,691	62
1901.....	17,701,216	12,606,505	71
1902.....	25,643,566	19,261,419	75
1903.....	29,538,365	23,297,040	79
1904.....	29,434,932	22,932,886	78
1905.....	35,245,824	29,607,215	84
1906.....	45,085,195	38,367,342	85

The shifting from coffee to sugar as the leading article of export appears from the following table:

ARTICLE.	1895		1906	
	Quantity.	Value.	Quantity.	Value.
	<i>Pounds.</i>	<i>Dollars.</i>	<i>Pounds.</i>	<i>Dollars.</i>
Coffee.....	39,683,160	5,640,055	28,503,350	3,496,082
Sugar.....	134,267,840	2,404,872	410,554,950	14,184,722
Tobacco.....	.....	414,869	.....	3,566,540
All other.....	.....	598,813	.....	2,010,186
Total.....	.....	9,058,609	.....	23,257,530

(Before the American occupation Spain held the first rank both in imports and in exports, followed by the United States, though her predominance was not nearly so decided as that of the United States at the present day.) From 1893 to 1896 Spain sent 33 per cent of the imports and took 25 per cent of the exports of Porto Rico, as compared to the 88 per cent of imports and to the 82 per cent of the exports which to-day represent the share of the United States in the trade of the island. The relative positions of the various countries in the trade of the island before and after the American occupation are shown in the following table:

ANNUAL AVERAGE SHARE OF THE COMBINED IMPORT AND EXPORT TRADE OF PORTO RICO WITH THE UNITED STATES AND SEVERAL FOREIGN COUNTRIES FOR THE PERIODS 1893-1896 (FOUR CALENDAR YEARS) AND 1905-1906 (TWO FISCAL YEARS).

COUNTRY.	1893-1896	1905-1906
	<i>Per cent.</i>	<i>Per cent.</i>
Spain.....	28.80	3.20
United States.....	19.94	84.62
Cuba.....	13.41	3.74
Germany.....	8.88	.55
United Kingdom.....	8.34	.84
France.....	6.41	2.11
British possessions (not elsewhere specified).....	5.30	2.10
British East Indies.....	2.66	.23
Italy.....	2.02	.52
Netherlands.....	.96	.14
Austria-Hungary.....	.96	.50
Denmark.....	.63	.09
Belgium.....	.36	.24
Uruguay.....	.31	.20
Argentina.....	.28	.12
French possessions.....	.26	.01
Santo Domingo.....	.17	.12
Danish possessions.....	.09	.04
Sweden and Norway.....	.05	.01
Portugal.....	.04	.....
Venezuela.....	.03	.44

EXPORT TRADE.

Sugar, tobacco, and coffee constitute, as previously stated, the bulk of Porto Rican exports. Adding together the shipments to the United States and the exports to foreign countries we obtain for the three articles the following totals:

ARTICLE.	Value.	Per cent of total.
	<i>Dollars.</i>	
Sugar and molasses.....	14,738,572	63.37
Tobacco, and manufactures of.....	3,566,540	15.33
Coffee.....	3,496,082	15.03
Total of three main exports.....	21,801,194	93.73
All other exports.....	1,456,336	6.27
Total exports.....	23,257,530	100.00

SUGAR.

Taking the shipments of domestic Porto Rican sugar to the United States alone, valued at \$14,184,319, neglecting the small quantity of sugar shipped to foreign countries, valued at \$403, we find that this single item exceeds the aggregate of all other articles (\$9,073,211) by \$5,111,108, or, in percentages—

	Per cent.
Sugar shipped to the United States.....	60.99
All other shipments and exports.....	39.01
Total shipments and exports.....	100.00

This leading position among exports was reached by sugar in recent years by successive steps, but the great relative growth seems now to have come to a standstill, as appears from the following table:

SHARE WHICH SUGAR SHIPPED TO THE UNITED STATES FORMED OF THE TOTAL SHIPMENTS FROM PORTO RICO, 1901 TO 1906.

FISCAL YEAR.	Per cent.	FISCAL YEAR.	Per cent.
1901.....	54.32	1904.....	53.42
1902.....	47.37	1905.....	63.74
1903.....	49.49	1906.....	60.99

The decline in relative importance in 1906 was not due to an absolute decline in sugar shipments, for those of 1906 exceeded those of 1905 by \$2,258,744, but to the greater proportional increase of the tobacco and coffee exports, tobacco having risen from 13.36 per cent in 1905 to 15.33 per cent in 1906 of the total exports, while coffee rose from 13.11 per cent in 1905 to 15.03 per cent in 1906. Though sugar will doubtless continue to increase in absolute amount, yet, as noted elsewhere, it is not likely to increase or perhaps even to maintain its relative importance, since the sugar lands are practically all occupied, and any increase must come from improved methods of cultivation, while tobacco and coffee can be grown almost anywhere on the island, and coffee, at least, admits of four-fold increase per acre through improvement in methods.

Considering the vast increase of the sugar exports from less than 5 million dollars in 1901 to over 14 million dollars in 1906, it is somewhat surprising to find that the exports of molasses have during the same period remained practically stationary at about half a million dollars, being \$595,902 in 1901 and \$553,850 in 1906, shared about equally between the United States and Canada, the quantity going to other countries being insignificant. The main reason is to be found in the greater perfection of modern methods of sugar extraction used in the new "centrals," whereby a greater percentage of the juice is converted into sugar. It is probable also that a greater proportion of molasses is now fed to cattle or used as fertilizer or in the distillation of rum, leaving less for export.

TOBACCO.

A glance at the table on page 54 shows that the exports of tobacco are far higher now than they ever were in the history of the island, the highest figure reached under Spanish rule being \$717,308 in 1897, or about one-fifth of the \$3,566,540 worth exported in 1906. This increase is mainly due to exports of cigars to the United States, which amounted to \$3,069,576 in 1906, or 86 per cent of the total tobacco shipments to the United States. The tables on pages 60 and 68 show that while the shipments to the United States of leaf tobacco and cigars as a whole have increased from less than a half million dollars in 1901 to over 3½ millions in 1906 the exports of all kinds of tobacco to foreign countries have decreased until in 1906 they were only \$9,063 in value, as compared with \$266,479 in 1901. Meantime the shipments of leaf tobacco to the United States only about quadrupled. It appears from this that the rapidly increasing tobacco manufacturing industry of Porto Rico, with its advantage of cheap labor, low rent, and the expectation of abundant water power at an early date, will tend more and more to absorb the raw tobacco produced in the island, exporting it mainly in the form of finished goods to the great market of the United States, where it is admitted free of duty, and to withdraw it from the foreign markets, which it can only reach over tariff walls.

COFFEE.

The coffee industry, as has been repeatedly noted, is the only exception to the general prosperity. Mention has been made of the alternations in relative importance which the sugar and coffee exports showed from 1841 to the present time, sugar having been in the lead till 1879, when for the first time it was surpassed by coffee. After that there were several alternations until 1888 when coffee took a forward bound, maintaining its lead until 1899. In the "banner year"—1896—the exports of coffee were nearly four times those of sugar in value. The political upheaval of 1898 and still more the hurricane of 1899 gave a blow to the coffee industry from which it has not yet recovered. The various causes of this decline have already been discussed. Since 1900 the industry has somewhat revived, and it is predicted that the crop of 1907 will be fully 50 million pounds, or nearly that of the banner year 1896. From 1905 to 1906 coffee has even gained in relative importance as compared to sugar, the coffee exports in 1905 having been in value only one-fifth those of sugar, while in 1906 they were one-fourth. Thus during that year coffee increased even more than tobacco, and there seems every prospect that it will maintain its relative position.

As regards its destination, coffee differs essentially from the other two main exports. While the United States takes practically all the sugar and more than half the molasses exported from Porto Rico and practically all the tobacco, it took in 1906 not quite 1 per cent of the coffee measured by value, though a little more than 1 per cent by weight. In other words, Porto Rican coffee has to rely at present almost entirely on the foreign market. With imports of coffee into the United States in the fiscal year 1906 amounting to 852 million pounds, valued at \$73,256,134, of which only 18 million pounds, valued at \$1,638,024, were reexported, leaving 834 million pounds, valued at \$71,618,110, as the approximate coffee consumption of the United States, it seems surprising that the 28,503,350 pounds of coffee exported from Porto Rico in 1906, representing a value of \$3,496,082, were not all absorbed by this immense market so close to the island. Instead of so doing the United States imported 51 million dollars' worth of coffee from Brazil, 5½ million dollars' worth from Venezuela, 4 million dollars' worth from Colombia, 3 millions from Guatemala, 2½ millions from Costa Rica, and 2½ million dollars' worth from Mexico.

Various reasons have been assigned for this phenomenon. The most obvious reason at first sight would seem to be the cheapness of Brazilian coffee. The Brazilian laborer works for even less wages

than the Porto Rican, and as no shade is used in Brazil, the output per acre is greater and the labor less, so that Brazilian coffee brings a profit at prices which to the Porto Rican planter would mean a loss. However, though the cheapness of Brazilian coffee might explain why Porto Rican coffee finds it difficult to gain a footing in the United States, it will not account for the fact that it maintains its footing in Europe and Cuba, where it also meets the competition of Brazilian coffee, while the purses of Europeans and Cubans as a rule are not longer than those of Americans. It is stated, on the other hand, that the preference of Americans is for strong coffees, such as those of Brazil. This, however, would not account for the 9 million dollars' worth of coffee imports from Mexico and Central America, whose product is mild like that of Porto Rico.

The true explanation is to be found mainly in the fact that the countries which consume most of the Porto Rican coffee have a high import duty on all coffee, converting it into a luxury. In these countries, the consumer, having to pay a high price, takes care to get a superior article for his money, and hence gives the preference to the mild coffees of Porto Rico and other countries over the strong coffee of Brazil, even though the latter may be a trifle cheaper. In countries which admit coffee free, on the contrary, the original difference in the cost of production makes a greater difference in the final price to the consumer, and hence leads him to prefer the cheaper article. Accordingly we find, as a general rule, that, while Brazil, the producer of 72 per cent of the world's coffee, has of course the lion's share in all the markets, the mild coffees find their way mostly to countries with a high import duty and low per capita consumption, while the countries which admit coffee free and therefore have a high per capita consumption draw their supply almost entirely from Brazil. The relation between rate of duty and per capita consumption is exhibited in the following table:

RATE OF DUTY AND CONSUMPTION OF COFFEE IN VARIOUS COUNTRIES.

COUNTRY.	Rate of duty per pound.	Per capita consumption.	COUNTRY.	Rate of duty per pound.	Per capita consumption.
	<i>Cents.</i>	<i>Pounds.</i>		<i>Cents.</i>	<i>Pounds.</i>
Cuba.....	<i>a</i> 10.6 <i>b</i> 8.5	26.17	Germany.....	<i>a</i> 4.3 <i>g</i> 11.4	6.63
Austria-Hungary.....	<i>c</i> 6.8 <i>d</i> 7.4	2.05	Italy.....	<i>a</i> 13.2 <i>g</i> 11.4	1.20
Belgium.....	Free.	17.81	Netherlands.....	Free.	14.39
France.....	<i>e</i> 26.3 <i>f</i> 11.9	6.27	Spain.....	12.3	1.18
			United Kingdom.....	3.4	0.67
			United States.....	Free.	11.75

a General.
b From United States.
c Imported by sea.
d Imported by land.

e Maximum.
f Minimum.
g Conventional.

Custom, however, counts for a good deal. It has almost passed into a proverb that, "Whoever gets accustomed to Porto Rican coffee will have no other." This is illustrated by the table on page 55, which shows that five countries—Cuba, Spain, France, Germany, and Italy—have been the principal customers for Porto Rican coffee ever since 1870, and that their relative consumption of this product has remained more or less constant. The three notable changes in recent years have been the great increase of coffee exports to Austria-Hungary, rising from 34,365 pounds in 1885 to 3,898,731 pounds in 1904; the practical cessation of coffee exports to the United Kingdom, which, having taken 5,692,226 pounds in 1881 and 1,102,310 pounds as late as 1895, took none in 1906, and the great increase of exports to Cuba since the establishment of reciprocity.

In 1906 the percentages of exports of coffee to the various countries, in quantities, were as follows:

PERCENTAGES OF COFFEE SHIPMENTS FROM PORTO RICO TAKEN BY VARIOUS COUNTRIES IN 1906.

COUNTRY.	Percent.	COUNTRY.	Percent.
Cuba.....	41.35	Germany.....	3.28
Spain.....	21.93	United States.....	1.07
France.....	17.54	Other countries.....	2.03
Austria.....	7.15		
Italy.....	5.65	Total.....	100.00

In 1902, 1903, and 1904 France was by far the best customer, taking in each year from one-third to nearly half the coffee exports. In the same years, too, Spain took about 60 per cent more than Cuba. With 1905, however, the preponderance of Cuba became decided, and there is reason to believe that this condition will last as long as reciprocity lasts, unless indeed Cuba develops a coffee industry of her own, which is not likely so long as labor is dear in Cuba and cheap in Porto Rico, and dear labor finds much more profitable employment in the sugar industry.

OTHER ARTICLES OF EXPORT.

As the remaining exports (other than sugar and molasses, tobacco, and coffee) constitute only 6.26 per cent of the total exports, they might be dismissed with a brief mention were it not that some of them are certain to develop largely within the near future. Their relative importance in 1906 is shown in the following percentages:

RELATIVE IMPORTANCE OF MISCELLANEOUS EXPORTS FROM PORTO RICO IN 1906.

ARTICLE.	Exports to all countries.	Per cent of total exports.
	<i>Dollars.</i>	
Fruits and nuts.....	502,858	2.16
Cotton, unmanufactured.....	217,735	.94
Animals.....	173,233	.75
Straw and palm leaf, manufactures of.....	117,049	.51
Hides and skins other than fur.....	116,139	.50
Perfumery and cosmetics.....	27,771	.12
Seeds.....	26,554	.11
Breadstuffs.....	12,302	.05
Starch.....	10,370	.04
All other.....	110,863	.47
Exports of foreign origin.....	141,462	.61
Total.....	1,456,336	6.26

More than half of the fruit was oranges, shipped exclusively to the United States. This is mainly the product of the native orange trees, which grow spontaneously all over the island. The orange plantations set out since the American occupation are as yet too young to figure largely in the trade returns, though there can be no doubt that they will greatly swell this class of exports within two or three years. Next to oranges, the most important items in this class are pineapples and cocoanuts, most of which find their way to the United States.

Cotton, as may be seen by the table on page 54, was an important item of export before 1877, reaching its highest figure, \$200,165, in 1865, evidently as a result of the civil war in the United States, which cut off the cotton exports from the Southern States. With the cessation of the war, the cotton industry of Porto Rico rapidly declined, until the last recorded exports, in 1878, amounted to only \$2,919. The revival of this industry was indicated by an

item of \$104 among the exports to foreign countries in 1902, and with 1904 begins a rapidly ascending exportation of this article, the shipments to the United States and foreign countries amounting in 1906 to \$217,735, considerably in excess of the highest record under Spanish rule. At first these recent exports of cotton came almost entirely to the United States, but in 1906 the United Kingdom absorbed nearly one-third of them.

Considerably more than half of the animals exported were cattle destined for Cuba, to replace those slaughtered during the rebellion. The same was the case in earlier years, the exports of live stock to Cuba rising and falling with the rise and subsidence of political disturbance in that country. Thus from 1868 to 1880, during the twelve years' war, the exports of live stock were uniformly high, attaining their maximum of \$540,091 in 1879; with the advent of peace they fell to an average of \$140,000 a year. Next to cattle, horses, averaging about \$50,000 in value during the last six years, were the most important item among live stock, nearly all going to Cuba.

Manufactures of straw and palm leaf, consisting mostly of palm-leaf hats, are a fluctuating item, rising as high as \$177,167 in 1902, nearly all of which went to the United States. The exports of these light, soft-colored, pliable, and very durable hats might readily be multiplied, were it not that this branch of commerce is subject to the caprice of fashion.

Hides and skins represented an average value of about \$90,000 during the last six years. In 1901 more than half of them went to foreign countries, but since then the United States has tended more and more to absorb them, until in 1906 the value of those going abroad had dwindled to \$3,474. Starch, most of it probably derived from yautias, is shipped chiefly to Cuba, the value exported thither in 1905 having been \$27,161 out of a total of \$28,284, this figure being the highest ever reached in a single year.

IMPORT TRADE.

In imports the most striking fact is the absence of any article or group of articles occupying so dominant a position as sugar does among exports (60.99 per cent); or, still more, sugar, tobacco, and coffee combined, which, as we have seen, constitute 93.74 per cent of the total exports. The largest item of imports, manufactures of iron and steel, forms only 16.02 per cent of the total imports. The share which the several classes of imports had in the total of 1906 is shown in percentages as follows:

VALUE AND PER CENT OF CLASSES OF PORTO RICAN IMPORTS, 1906.

CLASS.	Value.	Per cent of total.
	<i>Dollars.</i>	
Foodstuffs, crude or prepared (breadstuffs, fish, meat and dairy products, rice, beverages, vegetables, sugar, molasses, and confectionery).....	8,883,318	40.70
Textiles and manufactures thereof (cotton cloth, other fibers, wool and manufactures of).....	3,038,440	13.92
Crude materials (other than textiles) for manufacturing (coal and oils).....	471,054	2.16
Manufactures (other than textiles) ready for consumption or for further use in manufacturing (chemicals, drugs, and dyes; iron and steel manufactures; leather manufactures; paper and its manufactures; wood and its manufactures; cars and carriages; candles; tobacco and its manufactures; books, maps, and engravings; scientific instruments; chinaware, and soap).....	6,538,852	29.96
All other imports ^a	2,896,001	13.26
Total.....	21,827,665	100.00

^a In the table from which this summary was prepared, the "All other" probably contained small amounts of articles belonging to the four specified classes.

Seven items, ranging from 3½ millions to nearly a million, far exceeded all the rest. They were as follows:

VALUE AND PER CENT OF PORTO RICAN IMPORTS, BY ARTICLES, 1906.

ARTICLES.	Value.	Per cent of total.
	<i>Dollars.</i>	
Iron and steel manufactures.....	3,497,261	16.02
Rice.....	3,353,986	15.37
Cotton cloth, and manufactures of.....	2,556,991	11.71
Meat and dairy products.....	2,011,603	9.22
Breadstuffs.....	1,395,257	6.39
Fish.....	1,028,865	4.71
Wood, and manufactures of.....	933,428	4.28
Total of 7 items.....	14,777,391	67.70
All other imports.....	7,050,274	32.30
Total imports, 1906.....	21,827,665	100.00

The total imports increased from \$8,918,136 worth in 1901 to \$21,827,665 worth in 1906. There was an increase in every year, except from 1903 to 1904, when the imports decreased from \$14,449,286 to \$13,169,029.

With the exception of a slight falling off from 1904 to 1905, not large enough to affect the percentage, the share of the United States in the total imports has increased from year to year, as shown by the following table:

SHARE OF UNITED STATES IN PORTO RICAN IMPORTS, 1901 TO 1906.

YEAR.	Share of United States.	YEAR.	Share of United States.
	<i>Per cent.</i>		<i>Per cent.</i>
1901.....	78	1904.....	85
1902.....	82	1905.....	85
1903.....	85	1906.....	89

In 1906 the imports from the United States exceeded those from foreign countries in all lines of goods, except in chocolate, coffee, metals not elsewhere specified, vegetable oils, perfumery, pipes and smokers' articles, salt, distilled spirits, and onions. The 212,928 pounds of coffee imported, mainly from Venezuela, were evidently imported merely for reexportation to Europe. One item in which the imports from the United States and foreign countries are nearly equal is fish, which comes in large quantities from Nova Scotia and New Brunswick.

IMPORTS FROM THE UNITED STATES.

In 1906, of the imports from the United States into Porto Rico, \$7,660,482 worth, or 41 per cent, were agricultural. This represents a considerable change from the years immediately preceding the American occupation, the proportion of agricultural imports from the United States during the period 1893 to 1897 having been 62 per cent. The decline has been continuous from earlier years, the figure for 1891 and 1892 having been 67 per cent.

Agricultural imports.—Of the total agricultural imports, rice constituted by far the most important item, its value in 1906 amounting to \$3,347,101, or 44 per cent of the total agricultural imports. Next followed meat and dairy products, \$1,800,671; and breadstuffs, \$1,395,257, these three combined forming over 85 per cent of the total agricultural imports.

The imports of rice from the United States increased continuously from 1901, the increase averaging more than 20 per cent per annum,

while the imports of rice from foreign countries have almost entirely ceased, having decreased from \$159,371 in 1901 to \$6,885 in 1906. Among breadstuffs the principal item was wheat flour, valued in 1906 at \$1,181,114, or nearly 85 per cent of the total breadstuffs. It increased almost continuously from 1901. Bread and biscuit also exhibited a steady increase until they amounted in 1906 to \$139,644. Under the head of vegetables the principal item was beans and pease, \$194,165. Beans and pease show great fluctuations in importations, the periods of their previous maxima, 1902 and 1903, coinciding also with the periods of their largest imports from foreign countries, indicating short crops of these two products in the island. Beans and dried pease of foreign origin valued at \$45,613 were shipped from the United States to Porto Rico in 1906. Potatoes, almost exclusively derived from the United States, after fluctuating in the neighborhood of \$50,000 a year, suddenly rose to \$104,876 in 1906. Onions in 1906 amounted to \$10,273, this being the only item among vegetables in which the imports from foreign countries, \$60,405, greatly exceeded those from the United States. The imports of cocoa and chocolate, \$21,260, also fell slightly below the total from foreign countries, \$26,456, and even below those from France alone, \$24,154. Among fruits and nuts, amounting to \$49,579 in 1906, the largest item was canned goods, \$15,311. Pepper of foreign origin, to the value of \$12,651, was shipped from the United States to Porto Rico. The United States sent to Porto Rico \$151,590 worth of refined sugar and \$93,795 worth of confectionery in 1906, these figures representing a substantial growth over previous years. The island also imported from the United States \$368,156 worth of tobacco and manufactures thereof, mostly leaf tobacco, probably intended for wrappers. Oil cake to the value of \$26,237 was imported, nearly all being cotton-seed oil cake. Vegetable oil amounted to \$50,859, of which \$28,053 worth was cotton-seed oil and \$20,732 worth linseed oil. Spirits, wines, and liquors amounted to \$249,771, having risen steadily from \$77,304 in 1901. Nearly three-fourths of this was malt liquors, the value of which is generally more than twice that of the wines, the amount of distilled liquors imported being very small.

Imports of live animals were insignificant except in 1906, when they amounted to \$52,646, of which \$45,401 represented the value of 245 mules. By far the largest item among animal products was meat and dairy products, valued in 1906 at \$1,800,671, or nearly double the amount of 1901, which was \$961,001. Hog products, amounting to \$1,091,397, formed 72 per cent of the total meat products (\$1,513,860). They consisted principally of salted or pickled pork, \$484,367; hams, \$317,877; and lard, \$273,350. Lard compounds and substitutes for lard amounted to \$255,046; sausage and sausage meats to \$109,846. Beef products amounted to only \$28,904, Porto Rico itself being a large exporter of cattle. Dairy products amounted to \$286,811, of which about one-half was cheese. This item has nearly doubled since 1901, while milk has practically doubled in a single year. There were \$23,966 worth of foreign meat and meat extracts and \$21,981 worth of foreign cheese shipped from the United States to Porto Rico.

Nonagricultural imports.—The nonagricultural imports in 1906 amounted to \$10,988,509, or 59 per cent of the total shipments of domestic merchandise from the United States to Porto Rico. Two items among them, namely, cotton cloth and other manufactures of cotton, \$2,419,121, and manufactures of iron and steel, \$3,240,649, form more than half of the total. All the textiles together (cotton, other vegetable fibers, silk, and wool) amounted to \$2,801,547, or 26 per cent of the total of nonagricultural imports. Adding together agricultural implements, iron and steel manufactures, cars and carriages, copper manufactures, and metal furniture, we have a total of \$3,712,953 for metal goods, or 34 per cent of the total of nonagricultural imports.

Of foodstuffs, the only item in this category is fish, the imports of which are almost exactly divided between the United States and foreign countries, those from the former being valued in 1906

at \$514,902, those from the latter at \$514,733, nearly all from Canada. It is to be noted, however, that \$132,493 worth of foreign fish were shipped from the United States to Porto Rico in 1906, most of it doubtless originally from Canada, the largest item being \$117,363 worth of cod, etc. Of the fish imports from the United States, the item "Cod, haddock, hake, and pollock" amounts to \$436,108, or 85 per cent of the total fish imports from the United States. Herring were valued at \$33,131; canned salmon at \$30,378.

Among textiles, the single item of colored cotton cloths amounted in 1906 to \$1,220,247, or nearly one-half of the total of textiles. Uncolored cloths amounted to \$371,230, wearing apparel to \$279,650. In colored cloths there has been a steady increase since 1901, except in 1904, when there was a decided falling off. Uncolored cloths, on the other hand, have almost uniformly declined from the figure of \$510,661, in 1901, until in 1906 they reached the lowest figure since 1900. In wearing apparel there has been on the whole an increase, but the maximum of \$445,951 in 1902 was 60 per cent in excess of the total for 1906. Under the head of woollen manufactures, the largest item in 1906 was wearing apparel, which amounted to \$58,563, out of a total of \$140,807 for woollen goods. In woollens, the imports from the United States have nearly doubled from the figure of \$81,056 in 1902, the figure for 1901 being abnormally small. Other vegetable fibers (flax, hemp, jute, etc.) were represented in 1906 by a total of \$143,901, in which the largest item was \$55,819 for cordage. From a total of \$19,072, the item of vegetable fibers other than cotton has risen to more than seven times that amount. Silk manufactures amounted in 1906 to \$97,718. While silk imports from foreign countries have fallen off nearly one-half, those from the United States show an increase greater than any other article, its figure for 1901 having been \$1,620.

Agricultural implements came exclusively from the United States. They show a rapid increase, rising from \$8,132 in 1901 to \$42,365 in 1906. The last-named figure included \$30,911 for plows and cultivators, doubtless shipped for the most part to the sugar plantations, which are rapidly modernizing their outfit.

Under the head of iron and steel, valued at \$3,240,649 in 1906, machinery of various kinds represented \$1,848,255. The largest items were steam engines and parts of, \$304,314; sewing machines, \$198,446; and pumps and pumping machinery, \$159,513. The total for steam engines, \$304,314, represents a large advance over the figures of 1901, \$42,383. The growing railway commerce is illustrated by the fact that the number of locomotives imported in each of the six years 1901-1906 was: 1, 2, 5, 0, 7, 16, while the value of rails imported rose from \$20,436 to \$132,756 and that of railway cars from \$54,227 to \$260,040. The items pumps and pumping machinery, \$159,513; and pipes and fittings, \$232,323, are probably connected, for the most part, with the irrigation works and the factories in the sugar districts, and their rapid increase since 1901 testifies to the expansion and modernization of that industry. The increase in sewing machines from \$6,285 in 1901 to \$198,446 in 1906 is gratifying evidence of the growing purchasing power of Porto Rican households. Sheets and plates amounted in 1906 to \$148,905; structural iron and steel to \$72,031; wire to \$55,734; builders' hardware, saws, and tools to \$75,526; wire nails and spikes to \$36,294. In all these, the advance since 1901 has been very great, varying between twofold and tenfold. Instruments and scientific apparatus advanced from \$28,377 in 1901 to \$88,860 in 1906, of which latter total \$64,667 was for electric appliances, including telegraph and telephone instruments. The total of iron and steel manufactures increased nearly sevenfold from 1901 to 1906. In this trade, foreign competition has practically ceased. Carriages other than railway cars advanced from \$16,313 in 1901 to \$103,403 in 1906. Copper manufactures rose from \$6,169 to \$39,336, doubtless an evidence of the growth of the electrical industry. Furniture of metal rose from \$6,824 to \$27,160.

Wood and wood manufactures rose from a total of \$309,985 in 1901 to a total of \$824,500 in 1906. By far the largest item under this head was "Boards, deals, and planks," \$265,698 in 1906. Furniture increased from \$85,259 in 1901 to \$136,572 in 1906. The total of leather goods for 1901 was \$86,724, for 1906 \$441,652. Of the latter, \$298,293 represented boots and shoes.

In relative order of magnitude for the totals of 1906, the remaining imports from the United States were as follows:

MISCELLANEOUS IMPORTS INTO PORTO RICO FROM THE UNITED STATES IN 1901 AND 1906.

ARTICLES.	1901	1906
	<i>Dollars.</i>	<i>Dollars.</i>
Soap.....	27,348	247,038
Fertilizers.....	18,804	246,002
Chemicals, drugs, and dyes.....	89,236	201,472
Paper, and manufactures of.....	66,507	171,812
Bituminous coal.....	51,210	169,292
Mineral illuminating oil.....	69,829	140,890
Cement.....	11,712	85,997
Books, maps, engravings, etchings, etc.....	40,904	83,663
Candles.....	32,511	77,281
Glass and glassware.....	19,830	69,734
Paints, pigments, and colors.....	13,865	51,386
India-rubber manufactures.....	9,354	50,268
Straw and palm-leaf manufactures.....	11,480	43,238
Furs and fur skins.....		41,275
Earthen, stone, and china ware.....	5,733	39,878
Tin manufactures.....	4,415	25,899

IMPORTS FROM FOREIGN COUNTRIES.

The \$2,602,784 worth of imports into Porto Rico from foreign countries were divided, so far as specified, among 24 countries. Of these there were 16 with a total value of imports exceeding in each case \$20,000, whose combined imports amounted to \$2,563,258, or 99 per cent of the total. Six countries showed imports exceeding \$100,000, their combined imports amounting to \$2,088,794, or 80 per cent of the total. These facts are exhibited in the following table, showing the imports from the 16 countries in the order of magnitude for 1906 and the percentage of each:

VALUE AND PERCENTAGE OF IMPORTS INTO PORTO RICO FROM FOREIGN COUNTRIES, 1906.

COUNTRY.	Value.	Per cent.
	<i>Dollars.</i>	
Spain.....	642,200	25
Canada.....	575,787	22
France.....	345,785	13
United Kingdom.....	264,112	10
Germany.....	148,971	6
Belgium.....	111,939	4
Total for 6 countries.....	2,088,794	80
British East Indies.....	98,078	4
Uruguay.....	93,273	4
Cuba.....	61,529	2
Netherlands.....	48,181	2
Italy.....	38,812	2
Denmark.....	34,668	1
Canary Islands.....	31,328	1
Argentina.....	24,839	1
Mexico.....	22,857	1
Venezuela.....	20,899	1
Total for 10 countries.....	474,464	19
Total for 16 countries.....	2,563,258	99
All other foreign countries.....	39,526	1
Total imports from foreign countries.....	2,602,784	100

The imports from foreign countries were only about one-eighth of those from the United States, which in the fiscal year 1906 amounted to \$19,224,881. Among these foreign countries, Spain predominates in cotton cloths, fruits and nuts, glass and glassware, leather, olive oil, paper, pipes and smokers' articles, rice, onions. The imports from Canada consist almost entirely of fish, but she leads also in wood and manufactures of wood. France leads in chemicals, drugs, and dyes, chocolate, perfumery, cosmetics, and toilet preparations, spirits, wines, and woollens. The United Kingdom leads in paints, pigments, and colors, and stands next to the

East Indies in vegetable fibers other than cotton. Germany leads in earthen, stone, and china ware, and malt liquors. Belgium leads in structural iron and steel. The imports from the British East Indies consist entirely of vegetable fibers other than cotton, in which they far exceeded any other country and even slightly surpassed the total of all other foreign countries. The imports into Porto Rico from Uruguay consisted almost entirely of meat products, constituting about two-thirds of the total from countries other than the United States. The Netherlands furnished hardly anything but cheese, of which they supplied 88 per cent of the imports from foreign countries. Denmark's share consisted almost entirely of butter, constituting 94 per cent of the total from foreign countries. Most of the imports recorded as coming from the Canary Islands consisted of vegetables, chiefly onions. Imports from Argentina consisted almost entirely of meat products. Mexico sent hardly anything but beans and dried pease. The nominal share which Venezuela supplies of the imports into Porto Rico is sometimes much larger than it was in 1906, having been \$316,748 in 1905, but it consists almost entirely of coffee, which is evidently intended not for consumption in Porto Rico, but for reexportation.

It may be well to note that the leading position here attributed to various countries in certain lines of goods, as compared with other foreign countries, is in most cases insignificant as compared with the imports of the same article from the United States.

Of the total imports from foreign countries, \$674,402 worth, or 26 per cent, were agricultural, as compared with 41 per cent in the case of shipments from the United States to Porto Rico. In 1895 the agricultural imports were 51 per cent of the total imports from foreign countries.

Agricultural imports from foreign countries.—Of the agricultural imports from foreign countries in 1906, \$212,359 worth, or 32 per cent, consisted of meat and dairy products. Next in importance came vegetables, \$172,871, or 26 per cent; and spirits, wines, and liquors, \$103,253, or 15 per cent. These three together made a total of \$488,483, or 73 per cent.

Breadstuffs, with a total of \$34,153, consisted mostly of soup pastes, which form a large item of diet in Spanish-speaking countries. Chocolate from foreign countries is still in excess of that from the United States, though the increase of the latter has been slightly larger than that of the former. Nearly all the foreign chocolate comes from France. Fruits and nuts from foreign countries, almost all from Spain, amounted to \$32,166 (about two-thirds of the amount from the United States), nearly half of which consisted of canned fruits. Oils, \$71,285, consisted almost entirely of olive oil from Spain, \$63,884. Imports of this article have on the whole been increasing, though the figure for 1906 had not yet reached the maximum of \$68,600, recorded in 1902. Meat and dairy products amount to \$212,359, and have remained approximately uniform for the last five years. More than half of it was meat, two-thirds from Uruguay, one-fifth from Argentina. Dairy products consist practically of two items: Butter from Denmark, \$33,991; and cheese from Holland, \$47,882, each of them equal to about one-third the amount of the same article from the United States. Spirits, wines, and liquors, \$103,253, show an increase of about 70 per cent since 1901. Nearly two-thirds of this item consists of wines, of which Spain as late as 1902 furnished four-fifths, though in 1906 France had taken the lead. Distilled liquors are imported in small quantity, nearly all from France; malt liquors, about equal to other liquors in value, came mostly from Germany. In wines, the total was a little less than three-fourths the amount from the United States; in spirits, more than twice; in malt liquors, one-eighth. In vegetables, the principal item was onions, nearly all from Spain (those imported from the Canary Islands being probably of Spanish origin), the imports from the United States in this case being less than those credited to Spain. Next in importance are beans and dried pease, in which Mexico is slightly in the lead of Spain at present, while in earlier years Spain had a practical monopoly. However, the total of this item from foreign countries is but little more than one-fourth the amount from the United States, and there has been on the whole a decrease in imports of vegetables from foreign coun-

tries during the last five years, while shipments from the United States have greatly increased.

Nonagricultural imports from foreign countries.—The nonagricultural imports into Porto Rico from countries other than the United States in 1906 amounted to \$1,548,538, or 59 per cent of the total imports from foreign countries, as compared to the 26 per cent of agricultural imports, leaving 15 per cent or \$379,844 unspecified, as "All other." Of this total, about one-third was fish, a little more than one-fourth was textiles, and about one-sixth was metal goods. These facts are exhibited in the following table:

IMPORTS INTO PORTO RICO OF NONAGRICULTURAL PRODUCTS FROM FOREIGN COUNTRIES, 1906.

ARTICLES.	Value.	Percent.
	<i>Dollars.</i>	
Fish.....	514,733	33
Manufactures of vegetable fibers other than cotton.....	179,097	12
Cotton manufactures.....	143,987	9
Wool manufactures.....	17,596	1
Silk manufactures.....	12,693	1
Total textile manufactures.....	353,373	23
Iron manufactures.....	162,057	10
Metal manufactures other than iron, copper, lead, and tin.....	98,040	7
Total metal manufactures.....	260,097	17
Wood, and manufactures of.....	109,038	7
Leather, and manufactures of.....	92,832	6
Chemicals, drugs, and dyes.....	81,031	5
Paper, and manufactures of.....	52,260	4
Earthen, stone, and china ware.....	19,606	1
Perfumery, cosmetics, and toilet preparations.....	19,420	1
Glass and glassware.....	17,158	1
Pipes and smokers' articles.....	14,231	1
Paints, pigments, and colors.....	10,819	1
Cement.....	2,825	
Salt.....	1,115	
Total.....	1,548,538	100

The imports of fish, nearly all from Canada, have nearly doubled during the last six years.

Manufactures of vegetable fibers other than cotton, after remaining practically stationary from 1900 to 1904, showed a great increase in 1905 and 1906. In the latter year more than half of that item came from the British East Indies, consisting of jute cloth for bags used in shipping coffee and sugar. The imports of vegetable fiber manufactures from foreign countries exceeded those from the United States by about \$36,000, and it is to be noted that \$97,548 worth of foreign merchandise of this class was imported from the United States, of which \$85,836 worth was "bagging and gunny cloth." In imports of cotton manufactures there has, on the whole, been a decline since 1901, though Spain, the leading country, has somewhat increased her imports from \$18,007 to \$25,117. Imports of woollens have diminished by more than one-half, the leading country having been the United Kingdom, until 1906, when France took the first rank. Seven-tenths of the small quantity of silk manufactures came from France, Germany coming next.

Iron and steel manufactures have fluctuated so much that it is difficult to ascertain whether their movement is ascending or descending. The total from foreign countries amounts to only one-twentieth of the imports of iron manufactures from the United States. In metals other than iron, copper, lead, and tin, the United Kingdom held first rank. Copper, lead, and tin imports were very small.

The imports of wood manufactures from foreign countries consisted for the most part of boards and other sawed lumber from Canada—\$81,900. In almost every line of leather goods Spain held the first rank. More than half the chemicals, drugs, and dyes came from France, followed by Italy and Spain. Spain also furnished over nine-tenths of the paper manufactures. Perfumery and cosmetics came almost exclusively from France; glass and glassware and smokers' articles mostly from Spain.

STATISTICAL TABLES.

EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE FROM PORTO RICO, 1871-1897 AND 1901-1906. ^a

[From Report of the Porto Rico Chamber of Commerce.]

YEAR.	SUGAR.		MOLASSES.		COFFEE.		TOBACCO, UNMANU- FACTURED.		ANIMALS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	<i>Tons.</i>	<i>Dollars.</i>	<i>Gallons.</i>	<i>Dollars.</i>	<i>Pounds.</i>	<i>Dollars.</i>	<i>Pounds.</i>	<i>Dollars.</i>	<i>Number.</i>	<i>Dollars.</i>
1871.....	95,039	6,198,201	7,210,428	686,705	20,822,299	1,249,338	5,381,081	215,243	7,479	353,207
1872.....	81,935	5,343,577	5,571,956	530,662	18,355,133	1,101,308	6,318,421	260,484	8,565	434,950
1873.....	87,639	5,715,608	4,897,200	466,400	25,840,533	1,550,432	4,999,086	199,963	5,328	288,378
1874.....	71,755	4,679,703	5,126,703	488,257	17,709,195	1,066,151	4,236,475	172,997	6,496	314,822
1875.....	74,009	4,865,808	5,602,668	533,587	26,102,690	1,569,761	6,325,781	268,121	5,445	174,072
1876.....	69,923	4,429,776	6,532,890	622,180	20,826,390	1,249,583	6,490,595	332,122	6,302	220,560
1877.....	56,652	5,542,042	3,676,706	665,309	15,843,887	3,010,338	5,997,988	511,220	13,805	507,931
1878.....	76,537	7,487,278	4,367,592	754,402	17,051,486	3,325,040	5,237,861	878,554	12,279	431,405
1879.....	71,249	4,265,553	4,306,420	431,395	30,527,901	4,765,044	3,961,298	545,633	15,446	540,091
1880.....	46,260	2,737,703	3,343,060	340,840	21,832,862	3,368,046	5,540,235	754,115	10,400	395,396
1881.....	57,367	3,385,839	3,842,048	379,303	47,182,029	6,404,800	7,570,459	954,352	12,196	449,303
1882.....	83,566	4,875,972	4,556,858	612,683	29,435,446	3,403,308	5,077,174	683,468	11,675	499,551
1883.....	79,738	4,503,029	6,172,873	643,567	37,109,800	4,152,686	3,821,507	497,891	14,314	312,660
1884.....	98,974	5,555,561	6,687,300	692,984	25,756,611	2,864,811	2,721,584	352,443	7,626	197,565
1885.....	88,959	4,959,131	6,129,119	630,784	47,105,476	5,203,418	7,598,680	977,271	4,648	120,763
1886.....	63,777	3,389,633	4,137,265	405,946	36,436,769	3,837,334	4,464,082	547,370	5,362	131,529
1887.....	80,792	4,266,047	5,822,362	567,574	27,284,241	2,854,760	7,527,154	916,955	6,017	148,399
1888.....	61,987	3,368,880	4,220,514	423,403	50,489,967	5,437,381	3,301,239	413,925	4,487	114,222
1889.....	63,610	3,358,801	4,140,723	403,645	37,719,768	3,946,634	7,630,105	929,496	7,047	173,656
1890.....	58,192	3,149,430	3,346,312	334,352	43,300,983	4,643,769	3,930,817	490,812	4,819	122,015
1891.....	48,094	2,600,780	2,473,942	246,983	41,130,154	4,407,291	5,213,867	650,476	3,490	74,422
1892.....	67,303	3,202,341	3,826,646	644,855	46,704,544	7,496,431	4,148,713	605,363	3,347	79,627
1893.....	43,088	2,149,224	2,037,869	260,312	48,541,873	8,475,339	4,149,337	585,147	5,205	151,036
1894.....	48,409	2,165,368	1,447,619	166,996	49,803,672	7,853,024	3,322,682	423,165	4,362	114,278
1895.....	59,941	2,404,872	3,195,092	332,229	39,683,160	5,640,055	3,614,002	414,869	3,726	87,938
1896.....	55,775	2,401,647	3,923,099	328,966	57,961,291	8,915,975	2,188,987	271,969	3,527	90,148
1897.....	57,649	2,407,201	2,305,826	242,354	51,097,824	7,340,901	6,050,245	717,308	5,570	133,177
1901.....	63,397	4,715,708	2,848,314	595,902	12,157,240	1,678,765	4,990,237	375,527	16,972	576,577
1902.....	84,558	5,890,302	3,080,132	579,097	26,906,399	3,195,662	2,052,973	212,768	15,763	421,855
1903.....	104,059	7,469,122	4,278,479	665,000	34,807,139	3,970,574	2,251,627	203,649	12,813	322,964
1904.....	115,756	8,690,814	3,500,030	621,326	34,329,972	3,903,257	3,104,754	286,111	17,297	471,496
1905.....	121,128	11,925,804	4,612,062	576,125	16,849,739	2,141,009	2,513,271	437,882	10,519	280,932
1906.....	183,283	14,184,667	6,015,531	553,850	28,390,322	3,481,102	1,443,970	480,607	7,904	173,233

YEAR.	HIDES.		COTTON.		MINERAL GUANO. ^b		CIGARS.		All other articles.	Total.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.		
	<i>Pounds.</i>	<i>Dollars.</i>	<i>Pounds.</i>	<i>Dollars.</i>	<i>Tons.</i>	<i>Dollars.</i>	<i>Thousands.</i>	<i>Dollars.</i>		
1871.....	727,241	65,451	940,951	87,525	.....	.....	.....	.....	191,756	9,047,426
1872.....	582,377	52,414	653,266	57,075	.....	.....	.....	.....	227,655	8,008,125
1873.....	707,640	71,787	268,749	26,640	.....	.....	.....	.....	181,345	8,500,553
1874.....	473,884	42,649	229,554	22,495	.....	.....	.....	.....	324,562	7,111,636
1875.....	635,423	57,188	281,650	26,466	.....	.....	.....	.....	198,278	7,693,281
1876.....	459,264	41,334	131,457	12,026	.....	.....	.....	.....	177,882	7,085,563
1877.....	643,733	96,560	44,529	4,453	.....	.....	.....	.....	123,106	10,460,959
1878.....	306,664	59,500	29,123	2,919	.....	.....	.....	.....	190,829	13,129,927
1879.....	215,702	43,486	.....	.....	.....	.....	.....	.....	55,431	10,647,193
1880.....	583,503	86,225	.....	.....	.....	.....	.....	.....	96,753	7,779,078
1881.....	573,768	77,887	.....	.....	.....	.....	.....	.....	84,792	11,736,276
1882.....	812,080	88,572	.....	.....	.....	.....	.....	.....	233,559	10,397,113
1883.....	1,203,602	120,255	.....	.....	.....	.....	.....	.....	28,581	10,258,669
1884.....	775,408	76,962	.....	.....	.....	.....	.....	.....	293,251	10,033,577
1885.....	704,418	69,475	.....	.....	.....	.....	.....	.....	87,733	12,048,575
1886.....	479,541	45,092	.....	.....	.....	.....	.....	.....	59,733	8,416,637
1887.....	772,574	72,174	.....	.....	.....	.....	.....	.....	105,782	8,931,691
1888.....	662,669	63,718	.....	.....	.....	.....	.....	.....	211,232	10,032,821
1889.....	911,207	85,125	.....	.....	.....	.....	.....	.....	92,639	8,989,996
1890.....	628,926	60,221	.....	.....	.....	.....	.....	.....	117,402	8,918,001
1891.....	937,224	89,668	.....	.....	808	72,263	.....	.....	82,742	8,224,625
1892.....	643,013	51,603	.....	.....	7,375	584,853	.....	.....	83,786	12,748,859
1893.....	543,343	34,658	.....	.....	6,807	447,186	.....	.....	120,011	12,222,913
1894.....	751,580	43,301	.....	.....	8,356	495,711	.....	.....	139,958	11,401,142
1895.....	637,874	33,125	.....	.....	6,994	373,975	.....	.....	100,096	9,387,159
1896.....	381,296	21,431	.....	.....	.....	.....	.....	.....	192,799	12,222,935
1897.....	822,109	43,154	.....	.....	.....	.....	.....	.....	271,867	11,155,962
1901.....	689,722	81,542	.....	.....	.....	.....	11,013	296,021	263,925	8,583,907
1902.....	759,084	81,544	.....	.....	.....	.....	70,678	1,549,235	422,149	12,352,613
1903.....	718,022	88,842	.....	.....	.....	.....	67,964	1,753,815	471,865	14,945,831
1904.....	445,294	55,447	.....	.....	.....	.....	59,671	1,460,621	684,917	16,119,989
1905.....	698,004	86,196	.....	.....	.....	.....	87,961	2,152,051	1,109,567	18,709,565
1906.....	840,614	116,139	.....	.....	.....	.....	113,581	3,074,226	1,193,706	23,257,530

^a 1871 to 1897, calendar years; 1901 to 1906, fiscal years. The values from 1879 to 1897 have been converted into terms of United States currency in accordance with the rate of exchange shown on page 62.
^b Exports of guano practically ceased about 1896 and have just been resumed. See page 23.

COMMERCIAL PORTO RICO IN 1906.

55

EXPORTS OF COFFEE FROM PORTO RICO, 1870 TO 1906, BY COUNTRIES.^a

[From report of the Porto Rico Chamber of Commerce.]

YEAR.	United States.	Cuba.	Spain.	France.	Germany.	Italy.	United Kingdom.	Austria.	Other countries.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1870.....	151,925	5,956,848	4,496,841	1,286,153	.....	2,089,582	3,136,446	.....	298,967	17,416,762
1871.....	328,293	8,269,813	5,081,624	735,082	665,464	1,895,337	3,468,728	.....	386,958	20,822,299
1872.....	848,274	10,395,689	2,488,664	449,500	.....	2,050,500	1,244,559	.....	877,947	18,355,133
1873.....	2,614,545	9,780,323	6,299,827	.....	1,170,947	2,826,712	2,947,714	.....	200,465	25,840,533
1874.....	4,729,028	6,578,111	2,932,174	372,065	159,198	918,344	1,504,174	.....	576,101	17,769,195
1875.....	3,803,441	10,231,950	4,035,733	617,200	42,165	2,366,381	1,987,171	.....	3,078,649	26,162,690
1876.....	238,820	13,870,008	2,834,815	90,450	110,885	997,900	1,554,843	.....	1,128,669	20,826,390
1877.....	7,795	8,466,332	2,405,805	828,289	286,592	45,500	633,096	.....	3,170,478	15,843,887
1878.....	9,338	10,554,412	2,069,231	931,210	382,395	993,220	390,685	.....	1,720,995	17,051,486
1879.....	2,054,693	9,309,429	3,274,355	3,967,870	225,539	1,308,740	4,275,827	.....	6,111,448	20,527,901
1880.....	1,258,831	9,035,924	2,261,992	2,970,352	1,340,701	1,381,037	1,933,479	.....	1,650,546	21,832,862
1881.....	4,529,540	14,497,193	5,960,813	8,284,475	3,488,454	1,362,660	5,692,226	.....	3,366,668	47,182,029
1882.....	1,274,230	11,315,795	4,647,482	3,999,363	1,597,693	1,542,947	3,606,767	.....	1,451,169	29,435,446
1883.....	6,482,196	11,061,597	7,373,567	5,560,341	2,449,337	1,068,519	1,304,124	.....	1,810,119	37,109,800
1884.....	3,987,978	7,636,917	5,161,289	3,735,233	2,280,111	1,104,806	750,737	.....	1,099,540	25,756,611
1885.....	3,642,150	17,121,691	5,481,719	8,171,910	5,749,613	2,644,945	2,194,339	34,365	2,064,744	47,105,476
1886.....	2,208,130	12,055,176	3,440,506	11,197,637	3,873,658	2,086,747	309,267	83,691	1,181,957	36,436,769
1887.....	673,459	11,738,743	5,356,561	3,470,508	1,763,234	682,630	96,293	.....	3,502,813	27,284,241
1888.....	910,213	17,191,580	8,245,837	14,820,095	5,744,569	1,821,589	523,211	508,400	724,473	50,489,967
1889.....	246,100	13,546,600	4,604,913	8,042,940	5,330,417	3,386,169	729,374	1,415,250	418,005	37,719,768
1890.....	917,374	16,088,702	7,401,973	6,929,087	5,538,563	2,963,643	128,669	1,446,813	1,886,159	43,300,983
1891.....	105,228	15,887,469	11,695,426	4,496,524	2,950,086	2,752,945	83,909	2,989,567	169,000	41,130,154
1892.....	412,878	17,024,061	10,652,182	5,873,432	5,185,080	3,197,339	693,902	3,214,537	451,133	46,704,544
1893.....	999,709	15,273,235	11,727,535	7,024,887	7,678,295	2,321,630	392,363	1,281,491	1,842,728	48,541,873
1894.....	858,989	17,347,632	12,104,965	7,763,763	7,156,480	2,140,411	782,048	1,067,256	582,128	49,803,672
1895.....	77,409	14,141,799	6,145,602	5,164,393	2,628,030	1,102,310	642,487	156,461	39,683,160	.....
1896.....	318,097	15,360,737	16,177,391	11,149,204	8,007,304	4,327,689	329,465	2,248,461	42,943	57,961,291
1897.....	108,684	8,714,728	14,899,334	12,644,119	8,643,213	4,216,032	74,897	1,706,569	120,248	51,097,824
1898-1900 ^b	2,210,126	9,674,085	9,107,627	23,003,661	4,418,380	5,354,260	288,420	9,407,018	609,400	64,072,977
1901.....	29,565	4,633,538	2,500,096	3,348,025	493,891	611,033	11,006	386,158	53,928	12,157,240
1902.....	227,560	2,678,700	4,640,969	12,530,220	2,167,789	1,632,780	3,800	2,629,339	395,242	26,906,399
1903.....	6,314,686	3,526,023	6,749,321	11,058,801	2,669,519	2,125,445	31,859	2,217,386	513,090	35,207,139
1904.....	2,415,559	4,060,038	5,424,747	13,664,219	2,968,853	1,479,186	51	3,898,731	418,279	34,329,972
1905.....	1,519,149	6,242,120	3,990,730	2,986,883	278,659	1,018,544	356	754,956	58,698	16,850,095
1906.....	303,455	11,739,124	6,234,276	4,970,686	930,124	1,604,693	.....	2,030,997	576,967	28,390,322

^a 1870 to 1900, calendar years; 1901 to 1906, fiscal years.

^b Comprises two crops.

TONNAGE OF VESSELS ENTERED AND CLEARED IN THE TRADE OF PORTO RICO WITH FOREIGN COUNTRIES, YEARS ENDED JUNE 30, 1901-1906.

COUNTRIES FROM WHICH ENTERED AND TO WHICH CLEARED.	1901		1902		1903		1904		1905		1906	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Austria-Hungary.....	.....	.....	.....	.....	1,295	.....	.....	.....	895	3,233	5,919	.....
Belgium.....	.....	233	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark.....	.....	7,541	6,696	7,944	623	10,376	.....	5,067	.....	8,013	.....	11,344
France.....	3,256	4,867	3,322	1,697	1,760	1,834	2,869	.....	.....	.....	.....	.....
Germany.....	7,862	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Italy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,461	.....	2,235
Spain.....	59,255	33,329	67,341	32,891	77,866	39,976	74,141	51,573	67,274	40,677	72,805	46,285
United Kingdom.....	16,090	.....	19,131	.....	26,162	.....	17,311	.....	8,160	.....	14,312	6,201
British Honduras.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,607	.....	.....
Canada.....	5,545	6,142	7,827	7,775	6,964	6,100	6,306	6,307	6,453	7,260	6,928	4,311
Central American States:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Guatemala.....	.....	.....	.....	.....	.....	.....	.....	1,621	.....	.....	.....	196
Honduras.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,685
Panama.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexico.....	.....	.....	.....	.....	.....	10,613	.....	3,629	.....	7,178	.....	.....
West Indies:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British.....	11,420	8,691	9,533	9,624	11,226	7,601	8,760	9,063	24,236	18,934	20,205	20,220
Cuba.....	15,521	99,734	20,868	103,378	31,417	126,353	35,561	125,720	22,152	120,374	21,882	111,017
Danish.....	69,911	42,451	56,367	51,136	63,549	53,720	72,718	74,158	94,301	108,317	83,589	51,887
Dutch.....	7,778	11,660	40,996	41,952	67,521	56,285	58,968	53,831	25,184	2,188	27,420	47,173
French.....	1,193	1,092	1,834	2,875	1,832	9,116	309	5,351	4,278	4,161	950	5,914
Haiti.....	8,738	8,062	6,527	1,349	6,287	438	10,753	659	2,409	166	.....	.....
Santo Domingo.....	46,541	57,221	39,965	71,345	37,635	35,276	36,841	30,543	37,144	26,001	41,562	38,276
Argentina.....	.....	.....	.....	.....	.....	.....	639	.....	6,965	.....	2,508	648
Brazil.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colombia.....	1,942	2,442	1,260	2,775	.....	.....	.....	.....	.....	935	.....	13,559
Guiana-British.....	.....	.....	.....	.....	.....	.....	.....	.....	455	.....	.....	.....
Uruguay.....	.....	.....	.....	.....	310	.....	5,169	.....	5,759	.....	10,400	.....
Venezuela.....	67,120	40,999	68,750	13,398	41,852	2,547	70,172	15,870	81,578	18,802	78,459	7,015
French Africa.....	663	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	322,835	324,464	350,327	348,139	376,299	366,235	400,517	383,392	387,243	372,307	387,587	377,318

COMMERCIAL PORTO RICO IN 1906.

TONNAGE OF VESSELS ENTERED AND CLEARED IN THE TRADE OF PORTO RICO WITH FOREIGN COUNTRIES, YEARS ENDED JUNE 30, 1901-1906—Continued.

NATIONALITY.	1901		1902		1903		1904		1905		1906	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
American:	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Sailing.....	5,254	11,457	2,247	9,181	3,312	6,932	3,780	9,490	1,661	11,255	2,645	12,263
Steam.....	56,915	57,848	72,202	60,936	63,140	52,081	66,169	52,224	65,055	48,937	62,917	48,774
Total American.....	62,169	69,305	74,449	70,117	66,452	59,013	69,949	61,714	66,716	60,192	65,562	61,037
Argentine:												
Sailing.....	73	73										
Austrian:												
Steam.....							4,762	4,772	3,233	3,233		
British:												
Sailing.....	9,804	10,228	12,689	12,698	11,814	10,660	10,395	10,255	11,676	11,323	8,742	7,930
Steam.....	5,724	5,724	4,417	4,467	13,814	13,814	32,405	32,405	44,123	44,762	46,501	46,051
Colombian:												
Sailing.....							188	299			94	94
Cuban:												
Sailing.....			33			33						
Steam.....	22,710	25,034	29,292	29,292	29,292	30,599	25,587	25,587	14,910	14,910	13,598	13,598
Danish:												
Sailing.....	348	340	7	7	640	571	519	519	40	37	225	225
Steam.....							2,134	2,134	8,747	6,415		
Dutch:												
Sailing.....	1,196	1,444	1,119	725	2,857	2,845	1,744	1,398	1,375	1,300	803	803
Steam.....					1,295	1,295						
Dominican:												
Sailing.....	306	229	679	674	49	63	25	28	126	133	135	135
Steam.....									24	24	196	2,762
French:												
Sailing.....	900	951	738	738	595	916	718	718				
Steam.....	51,087	58,651	53,611	53,625	55,956	55,956	51,781	53,094	51,066	52,010	58,874	58,283
German:												
Steam.....	61,074	60,004	56,639	62,590	64,247	60,636	62,565	57,978	63,098	60,538	64,085	60,300
Italian:												
Steam.....			3,114	3,154			11,929	11,929	6,688	6,688	8,607	8,607
Norwegian:												
Sailing.....					1,502	770	1,245	1,245				
Steam.....	895	1,755			966	966	2,628	2,628	4,195	5,057	7,076	784
Russian:												
Sailing.....					372							
Spanish:												
Sailing.....	1,111	1,221	1,223	1,231	1,261	1,117	2,179	2,323	1,984	1,780	1,138	1,173
Steam.....	104,450	88,586	112,320	108,821	125,187	120,981	119,653	114,144	109,007	103,672	111,685	115,322
Venezuelan:												
Sailing.....	988	919					111	222	235	233	266	214
Total foreign:												
Sailing.....	14,726	15,405	16,485	16,073	19,090	16,975	17,124	17,007	15,436	14,806	11,403	10,574
Steam.....	245,940	239,754	259,393	261,949	290,757	284,247	313,444	304,671	305,091	297,309	310,622	305,707
Total American and foreign:												
Sailing.....	19,980	26,862	18,732	25,254	22,402	23,907	20,904	26,497	17,097	26,061	14,048	22,837
Steam.....	302,855	297,602	331,595	322,885	353,897	336,328	379,613	356,895	370,146	346,246	373,539	354,481
Grand total.....	322,835	324,464	350,327	348,139	376,299	360,235	400,517	383,392	387,243	372,307	387,587	377,318

TONNAGE OF VESSELS CLEARED FROM THE UNITED STATES TO PORTO RICO AND FROM PORTO RICO TO THE UNITED STATES IN THEIR TRADE DURING THE YEARS ENDED JUNE 30, 1901 TO 1906.

CUSTOMS DISTRICT.	1901 ^a		1902 ^a		1903		1904		1905		1906	
	Cleared from the United States.	Cleared from Porto Rico.	Cleared from the United States.	Cleared from Porto Rico.	Cleared from the United States.	Cleared from Porto Rico. ^a	Cleared from the United States.	Cleared from Porto Rico. ^a	Cleared from the United States.	Cleared from Porto Rico. ^a	Cleared from the United States.	Cleared from Porto Rico. ^a
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Baltimore, Md.....					363				6,889		4,303	
Boston and Charlestown, Mass.....									415		5,340	
Brunswick, Ga.....											906	
Fernandina, Fla.....					345							
New York, N. Y.....					137,853		110,414		106,835		183,828	
Norfolk and Portsmouth, Va.....					7,476		2,706		1,856			
Philadelphia, Pa.....					11,222		14,371		17,321		23,528	
Portland and Falmouth, Me.....					1,937		563		458			
St. Johns, Fla.....					1,679		2,595		3,765		1,533	
Savannah, Ga.....					245						155	
Wilmington, N. C.....					299		461					
Mobile, Ala.....											4,069	
New Orleans, La.....					35,195		43,765		47,502		45,408	
Pearl River, Miss.....					1,915		1,687				5,772	
Pensacola, Fla.....									2,615		720	
Total.....	196,998	188,969	213,569	201,212	198,527	235,718	176,562	247,628	188,520	255,942	275,562	340,776

^a No data available by districts.

STEAMSHIP LINES ENGAGED IN TRADE BETWEEN PORTO RICO AND THE UNITED STATES AND BETWEEN PORTO RICO AND FOREIGN COUNTRIES.^a

LINES OF VESSELS BETWEEN THE UNITED STATES AND PORTO RICO.

[All of these steamers are of American nationality.]

NAMES OF LINES AND VESSELS.	Net tonnage.	Port of departure and arrival in United States.	Port of arrival and departure in Porto Rico.	Other Porto Rican ports touched at.	Carries mail.	CARRIES PASSENGERS.		Frequency of line sailings from United States to Porto Rico.	Date of sailing from United States.	Date of sailing from Porto Rico.
						Cabin.	Steerage.			
<i>New York and Porto Rico S. S. Co.</i>										
New York and Porto Rico service:										
Coamo.....	2,815	New York.....	San Juan.....	Ponce, Mayaguez, and any other ports at which there is cargo to load or discharge.	Yes....	Yes....	Yes....	Bi-weekly, alternately.	Every other Saturday.	Every other Tuesday.
Carolina.....	3,086	do.....	do.....		Yes....	Yes....	Yes....	Once a month.....	Irregular.....	Irregular.....
Ponce.....	2,519	do.....	Ponce.....		Yes....	Yes....	Yes....	do.....	do.....	Do.
San Juan.....	2,519	do.....	Mayaguez.....		Yes....	Yes....	Yes....	do.....	do.....	Do.
Berwind.....	1,607	do.....	Subject to change.		No....	No....	No....	do.....	do.....	Do.
Windber.....	1,820	do.....	do.....		No....	No....	No....	do.....	do.....	Do.
New Orleans and Porto Rico service:										
Santurce.....	1,122	New Orleans.....	San Juan.....		No....	No....	No....	Once a month.....	Irregular.....	Do.
Arkadia.....	1,621	do.....	do.....		No....	Yes....	No....	do.....	do.....	Do.
Pathfinder.....	1,800	do.....	do.....		No....	Yes....	No....	do.....	do.....	Do.
Massapequa.....	2,386	do.....	do.....		No....	Yes....	No....	do.....	do.....	Do.
Porto Rico island service:										
Ramos.....	826		Engaged in coast-wise trade.							
Vasco.....	160		do.....							
<i>Insular Line of steamers.</i>										
Julia Luckenbach.....	1,977	New York.....	Ponce (arrival).....	All ports where there is cargo.	No....	No....	No....	Bi-weekly, from New York.	Irregular.....	Irregular.
Harry Luckenbach.....	1,799	do.....	San Juan.....		No....	No....	No....	do.....	do.....	Do.
Hugoma.....	1,284	New Orleans.....	do.....		No....	No....	No....	Monthly from New Orleans.	do.....	Do.
<i>Benner Line of sail vessels.^b</i>										
Various.....	800	New York.....	San Juan.....					Every 45 days.....		

^a Compiled from data furnished by the collector of customs, San Juan, P. R.; the Maritime Association, 78 Broad street, New York; the Exporters' Encyclopedia, 65 Duane street, New York; and in part by the various companies.^b The boats of the Benner Line are chartered sail vessels of an average of 800 tons net.

LINES OF VESSELS TOUCHING FOREIGN PORTS.

[All these steamers carry mails and have accommodations for both cabin and steerage passengers.]

NAMES OF LINES AND VESSELS.	Nationality.	Net tonnage.	ROUTES.		Frequency of line sailings from home ports.	Date touching at Porto Rico.				
			Terminus in foreign countries.	Intermediate ports touched at.						
				Foreign.			Domestic.			
Compañía Transatlántica de Vapores de Pinillo Izquierdo y Cia.: Conde Wilfredo..... Catalina..... Miguel M. Pinillos..... Martin Saenz..... Pio IX..... Valbanera.....	Spanish..... do..... do..... do..... do..... do.....	2,765 3,491 2,125 2,532 2,658 3,299	Voyage begins at Barcelona, thence to Mallorca, Torrevieja, Alicante, Valencia, Malaga, Cadiz, Canary Islands, Vigo, and Coruña, Spain; San Juan, Mayaguez, and Ponce, P. R.; Santo Domingo City; Santiago, Habana, Nuevitas, and Cienfuegos, Cuba; Veracruz and Progreso, Mexico; New Orleans, La.; and thence to Barcelona.		Once a month.....	Not fixed.				
Compañía de Vapores de A. Folch & Co.: Miguel Gallart..... José Gallart..... Juan Forgas..... Argentina..... Puerto Rico..... Berenguer el Grande.....	do..... do..... do..... do..... do..... do.....	2,012 2,345 1,920 2,206 1,742 2,103				do..... do..... do..... do..... do..... do.....	Do. Do. Do. Do. Do. Do.			
Compañía General Transatlántica Española: Buenos Aires..... Cataluña..... Leon XIII..... Manuel Calvo..... Monserrat..... Montevideo.....	do..... do..... do..... do..... do..... do.....	3,765 2,247 2,950 3,411 2,306 3,673		Voyage begins at Genoa; thence to Barcelona, Malaga, Cadiz, Las Palmas, Tenerife, and La Palma, Spain; San Juan, P. R.; Havana, Cuba; Puerto Limon, Costa Rica; Colon, Barranquitos, Curaçao, Puerto Cabello, and La Guayra; Ponce, San Juan, and returning thence to Spain and Genoa via the aforementioned Spanish ports. A vessel of this line touches at San Juan from Spain on the 22d of each month and sails on same date to Central American ports, and returns to San Juan on the 28th, sailing on latter date to Spain and Genoa.		Twice a month.....	22d and 28th of every month.			
Compagnie Transatlantique Du Paquebot Français: Quebec..... Montreal..... Salvador..... St. Domingue..... Ferdinand de Lesseps.....	French..... do..... do..... do..... do.....	2,083 2,083 407 483 1,541			Steamers Quebec and Montreal begin their voyages at Le Havre to Bordeaux, Coruna, St. Thomas, San Juan, P. R., Puerto Plata, Cape Haiti, Port-au-Prince. Upon arrival at Port-au-Prince they return to Le Havre via Cape Haiti, Puerto Plata, Sanchez, San Juan, P. R., and St. Thomas. They touch at San Juan from Havre on the 4th of every month and on return from Port-au-Prince to Havre they touch at San Juan, P. R., on the 17th of every month. Steamers Salvador and St. Domingue begin their voyages at Fort de France to Pointe-à-Pitre, Basse Terre, St. Thomas, Ponce, Mayaguez, Santo Domingo, Jacmel, Port-au-Prince, and then return to Fort de France via Petit-Grava, Jérémie, Santiago de Cuba, Les Cayes, Jacmel, Santo Domingo, Mayaguez, Ponce, St. Thomas, Basse Terre and Pointe-à-Pitre. These steamers touch at Ponce from Fort de France on the 4th of every month, and returning from Port-au-Prince they touch at Ponce on the 17th of every month. Transshipments are made from steamers from Europe to those plying in West Indies at St. Thomas and Port-au-Prince. The Ferdinand de Lesseps is used as a substitute steamer.			Twice a month.....	4th and 17th of every month.	
										do..... do..... do..... do.....

STEAMSHIP LINES ENGAGED IN TRADE BETWEEN PORTO RICO AND THE UNITED STATES AND BETWEEN PORTO RICO AND FOREIGN COUNTRIES—Continued.

LINES OF VESSELS TOUCHING FOREIGN PORTS—Continued.

NAMES OF LINES AND VESSELS.	Nationality.	Net tonnage.	ROUTES.			Frequency of line sailings from home ports.	Date touching at Porto Rico.
			Terminus in foreign countries.	Intermediate ports touched at.			
				Foreign.	Domestic.		
Hamburg-American Line:							
Various steamers.....	German.....	av. 1,500	Hamburg.....	The vessels of this line are employed too intermittently to name. Their route is subject to frequent changes, and frequent variations of ports of call occur in notices of sailing of vessels of this line. The President is at present regularly employed in the service between St. Thomas, Porto Rico, Santo Domingo, and Cuba.		Irregular; once or twice a month.	Not fixed.
President.....	do.....	924	St. Thomas.....				4th and 25th of every month.
The Red "D" Line:							
Philadelphia.....	American.....	1,900	La Guayra.....	Caracas.....	New York.....	Every other Wednesday, alternately.	Every two weeks.
Caracas.....	do.....	1,850	do.....	do.....	do.....		
Herrera Line:							
Julia.....	Cuban.....	1,134	Habana.....	Santo Domingo.....		Once a month.....	Not fixed.
Norton Line:							
Arabistan.....	British.....	2,045	Vessels of this line begin their voyage at Montevideo, thence to Trinidad, Porto Rico, Cuba, and New York, and thence to Montevideo again.			Every 45 days.....	Do.
Casilda.....	do.....	2,519				do.....	Do.
Etoña.....	do.....	1,600				do.....	Do.
Coronda.....	do.....	1,769				do.....	Do.

RESOURCES AND LIABILITIES OF BANKING INSTITUTIONS IN PORTO RICO AT THE CLOSE OF BUSINESS JUNE 30, 1905.

	Banco Español de Puerto Rico, San Juan.	Banco Territorial y Agrícola, San Juan.	American Colonial Bank of Porto Rico, San Juan.	First National Bank of Porto Rico, San Juan.	DeFord & Co., Ponce.	Credito y Ahorro Ponceño, Ponce.	Caja de Economías y Préstamos, San German.	Banco Popular, San Juan.	Total.
RESOURCES.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Bonds.....	73,000.00	210,433.00	816,597.00	100,000.00	1,300.00	48,937.50			1,177,268.00
Stock investments.....	173,993.19	44,522.74	220,395.36	143,018.75	42,676.37	24,626.80		19,361.16	419,090.48
Amount loaned on collaterals.....	372,444.54	1,541.43	101,940.21	4,465.00	45,679.74	137,230.71	49,090.16		414,588.84
Amount loaned on personal securities.....	374,025.01	517,041.69	260,383.59	22,056.40	21,053.47	28,604.72	5,437.42		863,800.30
Amount loaned on real estate.....	26,215.46		328,083.78		29,823.20			20,675.51	1,303,691.33
Overdrafts.....	142,339.73	6,986.92			275.16				26,490.62
Due from banks, agencies, and private firms.....	82,773.51	54,000.00	421,579.73	115,081.07	547,420.15	206,252.88		800.00	1,440,400.48
Real estate owned.....	227,135.26		12,122.13		21,983.59	58,813.00	1,438.55	1,754.54	220,763.19
Real estate, by foreclosure.....	2,205.45	1,628.61	10,071.80	955.00			475.63	144.66	239,257.39
Furniture and fixtures.....	11,651.04		10,071.80	1,632.64	1,000.00	3,064.81	878.60		19,545.96
Expense account.....	886,610.50	60,457.41	598,725.00	5,386.86	5,182.64	1,630.66	7,024.28		30,913.51
Cash on hand.....	1,047,232.65	393,756.80	1,925.89	53,579.14	24,276.66	325,567.49	1,533.26	1,533.26	1,957,773.74
Other assets not included in above headings.....				15,900.00	3,342.24	47,985.45	5.00		1,511,268.03
Total.....	3,132,491.08	1,517,503.86	2,776,376.06	456,688.00	744,217.44	886,266.00	65,101.70	46,267.73	9,624,911.87
LIABILITIES.									
Capital stock paid in.....			400,000.00	100,000.00		120,000.00	19,924.54	18,000.00	657,924.54
Surplus fund.....	56,000.00		140,000.00	6,580.88		27,000.00	3,559.33	2,157.63	235,297.84
Amount due depositors.....	637,200.12	150,206.43	2,134,738.62	244,702.07	93,185.09	681,297.26	37,344.95	21,031.23	3,999,705.77
Amount due other banks.....		5,914.53	60,634.02		646,236.83			1,500.00	714,285.38
Undivided profits.....	881.55	2,718.58	23,362.36		171.14	12,188.74	843.00	817.68	40,983.05
Interest account.....	32,331.99		17,641.06	4,878.74	1,119.89		3,420.28	1,916.69	61,308.65
Other liabilities not included in above headings.....	2,406,077.42	1,358,664.32		100,526.31	3,504.49	45,780.00	9.60	844.50	3,915,406.64
Total.....	3,132,491.08	1,517,503.86	2,776,376.06	456,688.00	744,217.44	886,266.00	65,101.70	46,267.73	9,624,911.87

STATISTICS OF POPULATION OF PORTO RICO.

[From Census of Porto Rico, 1899.]

TOTAL POPULATION OF CITIES.

CITY.	DEPARTMENT.	Popu- lation.	CITY.	DEPARTMENT.	Popu- lation.	CITY.	DEPARTMENT.	Popu- lation.
Adjuntas.....	Ponce.....	1,963	Corozal.....	Bayamon.....	1,057	Quebradillas.....	Arecibo.....	1,166
Aguada.....	Aguadilla.....	1,135	Fajardo.....	Humacao.....	3,414	Rincon.....	Aguadilla.....	1,074
Aguadilla.....	do.....	6,425	Guayama.....	Guayama.....	5,334	Rio Grande.....	Bayamon.....	1,285
Agua Buenas.....	Guayama.....	1,309	Gurabo.....	do.....	1,309	Rio Piedras.....	do.....	2,249
Aibonito.....	Ponce.....	2,085	Humacao.....	Humacao.....	4,428	Sabana Grande.....	Mayaguez.....	2,531
Añasco.....	Mayaguez.....	2,483	Juana Diaz.....	Ponce.....	2,246	Salinas.....	Guayama.....	1,192
Arecibo.....	Arecibo.....	8,008	Juncos.....	Guayama.....	2,026	San German.....	Mayaguez.....	3,954
Arroyo.....	Guayama.....	2,137	Lajas.....	Mayaguez.....	1,385	San Juan.....	Bayamon.....	32,048
Bayamon.....	Bayamon.....	2,218	Lares.....	Aguadilla.....	3,714	San Lorenzo.....	Guayama.....	2,084
Barceloneta.....	Arecibo.....	1,459	Manati.....	Arecibo.....	4,494	San Sebastian.....	Aguadilla.....	1,700
Cabo Rojo.....	Mayaguez.....	2,744	Matnabo.....	Humacao.....	1,277	Santa Isabel.....	Ponce.....	1,142
Caguas.....	Guayama.....	5,450	Maricao.....	Mayaguez.....	1,179	Toa Baja.....	Bayamon.....	1,300
Carolina.....	Bayamon.....	2,177	Mayaguez.....	do.....	15,187	Trujillo Alto.....	do.....	1,025
Cayey.....	Guayama.....	3,763	Moca.....	Aguadilla.....	1,470	Utua.....	Arecibo.....	3,619
Ceiba.....	Humacao.....	1,214	Morovis.....	Arecibo.....	1,064	Vega Alta.....	Bayamon.....	1,081
Ciales.....	Arecibo.....	1,356	Naguabo.....	Humacao.....	1,812	Vega Baja.....	do.....	2,288
Cidra.....	Guayama.....	1,034	Patillas.....	do.....	1,590	Vieques.....	Humacao.....	2,646
Coamo.....	Ponce.....	3,244	Peñuelas.....	Ponce.....	1,129	Yabucoa.....	do.....	1,838
Comerio.....	Guayama.....	1,191	Ponce.....	do.....	27,952	Yauco.....	Ponce.....	6,108

STATISTICS OF POPULATION OF PORTO RICO—Continued.

POPULATION BY MUNICIPAL DISTRICTS AND DEPARTMENTS.

DEPARTMENT AND MUNICIPAL DISTRICT.	Popula- tion.	DEPARTMENT AND MUNICIPAL DISTRICT.	Popula- tion.	DEPARTMENT AND MUNICIPAL DISTRICT.	Popula- tion.
Aguadilla department:		Bayamon department—Continued.		Mayaguez department:	
Aguada.....	10,581	Toa Baja.....	4,030	Añasco.....	13,311
Aguadilla.....	17,830	Trujillo Alto.....	5,683	Cabo Rojo.....	16,154
Isabela.....	14,888	Vega Alta.....	6,107	Hormigueros.....	3,215
Lares.....	20,883	Vega Baja.....	10,305	Lajas.....	8,789
Moca.....	12,410	Total.....	160,046	Las Marias.....	11,279
Rincon.....	6,641			Maricao.....	8,312
San Sebastian.....	16,412			Mayaguez.....	35,700
Total.....	99,645	Guayama department:		Sabana Grande.....	10,560
Arecibo department:		Aguas Buenas.....	7,977	San German.....	20,246
Arecibo.....	36,910	Arroyo.....	4,867	Total.....	127,566
Barceloneta.....	9,357	Caguas.....	19,857		
Camuy.....	10,887	Cayey.....	14,442	Ponce department:	
Ciales.....	18,115	Cidra.....	7,552	Adjuntas.....	19,484
Hatillo.....	10,449	Comerio.....	8,249	Aibonito.....	8,596
Manati.....	13,989	Guayama.....	12,749	Barranquitas.....	8,103
Morovis.....	11,309	Gurabo.....	8,700	Barros.....	14,845
Quebradillas.....	7,432	Juncos.....	8,429	Coamo.....	15,144
Utüado.....	43,860	Salinas.....	5,731	Guayanilla.....	9,540
Total.....	162,308	San Lorenzo.....	13,433	Juana Diaz.....	27,896
		Total.....	111,986	Peñuelas.....	12,129
Bayamon department:		Humacao department:		Ponce.....	55,477
Bayamon.....	19,940	Fajardo.....	16,782	Santa Isabel.....	4,858
Carolina.....	11,965	Humacao.....	14,313	Yauco.....	27,119
Corozal.....	11,508	Maunabo.....	6,221	Total.....	203,191
Dorado.....	3,804	Naguabo.....	10,873	Total Porto Rico.....	953,243
Loiza.....	12,522	Patillas.....	11,163		
Naranjito.....	8,101	Piedras.....	8,692		
Rio Grande.....	12,365	Vieques.....	6,642		
Rio Piedras.....	13,760	Yabucoa.....	13,905		
San Juan.....	32,048	Total.....	88,501		
Toa Alta.....	7,908				

TOTAL COMMERCE OF THE UNITED STATES WITH PORTO RICO, YEARS ENDED JUNE 30, 1855 TO 1906.^a

YEAR.	IMPORTS FROM PORTO RICO.			EXPORTS TO PORTO RICO.			YEAR.	IMPORTS FROM PORTO RICO.			EXPORTS TO PORTO RICO.		
	Free.	Dutiable.	Total.	Domestic.	Foreign.	Total.		Free.	Dutiable.	Total.	Domestic.	Foreign.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>		<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1855.....	138,812	2,313,561	2,452,373	1,128,581	38,937	1,167,518	1883.....	34,605	5,442,888	5,477,493	2,116,499	48,209	2,164,708
1856.....	37,782	3,818,481	3,856,263	1,078,349	41,125	1,119,474	1884.....	67,488	6,822,968	6,890,456	2,188,609	36,006	2,224,615
1857.....	9,770	5,738,172	5,747,942	1,399,654	52,285	1,451,939	1885.....	656,992	5,447,271	6,104,263	1,533,177	36,028	1,569,205
1858.....	52,389	4,380,279	4,432,668	1,308,304	38,278	1,346,582	1886.....	431,757	4,162,787	4,594,544	1,676,929	33,640	1,710,569
1859.....	27,530	4,790,115	4,817,645	1,564,901	67,326	1,632,227	1887.....	74,367	4,587,323	4,661,690	1,707,241	31,251	1,738,492
1860.....	47,586	4,465,349	4,512,935	1,374,837	34,087	1,408,924	1888.....	293,450	4,119,033	4,412,483	1,920,358	49,260	1,969,618
1861.....	10,514	3,353,758	3,364,272	1,237,399	35,270	1,272,669	1889.....	103,720	3,603,653	3,707,373	2,173,458	49,473	2,224,931
1865.....	2,312	3,483,941	3,486,253	2,824,545	70,121	2,894,666	1890.....	176,394	3,877,232	4,053,626	2,247,700	49,838	2,297,538
1866.....	1,449	6,168,569	6,170,018	2,046,389	81,703	2,128,092	1891.....	1,856,955	1,307,155	3,164,110	2,112,334	42,900	2,155,234
1867.....	8,054	5,305,195	5,313,249	1,595,474	41,547	1,637,021	1892.....	3,236,337	11,670	3,248,007	2,808,631	47,372	2,856,003
1868.....	2,688	6,342,951	6,345,639	2,456,003	91,533	2,547,536	1893.....	3,994,673	13,950	4,008,623	2,502,788	7,819	2,510,607
1869.....	7,265	7,400,385	7,407,650	2,333,539	106,632	2,440,171	1894.....	3,126,895	8,739	3,135,634	2,705,646	14,862	2,720,508
1870.....	13,490	8,169,759	8,183,249	2,220,705	80,006	2,300,711	1895.....	375,364	1,131,148	1,506,512	1,820,203	13,341	1,833,544
1871.....	11,976	9,440,469	9,452,445	2,511,305	86,334	2,597,639	1896.....	48,608	2,248,045	2,296,653	2,080,400	21,694	2,102,094
1872.....	26,336	11,301,430	11,327,766	2,406,252	136,907	2,543,159	1897.....	101,711	2,079,313	2,181,024	1,964,850	24,038	1,988,888
1873.....	448,355	7,530,676	7,979,031	1,913,333	88,857	2,002,190	1898.....	50,667	2,363,689	2,414,356	1,481,629	24,317	1,505,946
1874.....	1,416,442	5,468,277	6,884,719	1,857,060	149,329	2,006,389	1899.....	309,683	2,870,144	3,179,827	2,633,400	52,448	2,685,848
1875.....	243,357	6,670,325	6,913,682	2,113,638	97,563	2,211,201	1900.....	61,710	3,016,938	3,078,648	4,200,892	379,557	4,640,449
1876.....	160,279	4,013,515	4,173,794	1,750,162	65,794	1,815,956	1901.....			5,641,137	6,861,917	103,491	6,965,408
1877.....	83,796	4,321,956	4,405,752	1,980,265	109,320	2,089,585	1902.....			8,378,766	10,719,444	163,209	10,882,653
1878.....	24,061	4,776,756	4,800,817	1,504,431	49,358	1,553,789	1903.....			11,051,195	11,976,134	269,711	12,245,845
1879.....	64,621	4,320,333	4,384,954	1,771,483	39,191	1,810,674	1904.....			11,722,826	10,727,015	483,045	11,210,060
1880.....	539,793	4,904,093	5,443,886	1,969,284	47,289	2,016,573	1905.....			15,633,145	13,387,457	586,613	13,974,070
1881.....	516,302	3,343,897	3,860,199	1,712,732	50,080	1,762,812	1906.....			19,142,461	18,648,991	575,890	19,224,881
1882.....	284,042	5,432,832	5,716,874	1,838,214	24,367	1,862,581							

^a The commerce with Porto Rico is not included in the foreign commerce of the United States after June 30, 1900. From 1901 to 1906 shipments from Porto Rico to the United States are shown under the head of "Imports," and shipments from the United States to Porto Rico under the head of "Exports." Commerce with Porto Rico not separately stated in 1862, 1863, and 1864.

COMMERCIAL PORTO RICO IN 1906.

TOTAL IMPORTS AND EXPORTS OF PORTO RICO, 1836 TO 1906.

YEAR.	Imports.	Exports.	YEAR.	Imports.	Exports.	YEAR.	Imports.	Exports.
	<i>Dollars.</i>	<i>Dollars.</i>		<i>Dollars.</i>	<i>Dollars.</i>		<i>Dollars.</i>	<i>Dollars.</i>
1836	4,005,944	4,099,575	1862	9,199,108	5,793,962	1885	10,072,919	12,048,575
1837	4,209,489	4,861,636	1863	10,513,766	5,557,195	1886	9,089,570	8,416,637
1838	4,302,149	5,254,945	1864	10,379,824	4,965,382	1887	8,946,356	8,931,691
1841	6,062,362	5,962,445	1865	8,529,740	6,059,820	1888	12,031,499	10,032,821
1843	4,342,540	5,054,905	1866	8,871,327	5,592,247	1889	11,517,122	8,989,996
1844	5,257,228	6,204,764	1867	8,551,892	6,023,502	1890	15,179,338	8,918,001
1845	6,094,887	6,257,699	1868	8,754,690	5,730,239	1891	14,030,586	8,224,625
1846	5,550,590	5,369,020	1869	9,066,902	6,535,352	1892	14,339,104	12,748,859
1847	5,763,945	5,865,818	1870	13,479,951	8,104,619	1893	12,642,667	12,222,913
1848	4,469,751	5,595,137	1871	15,484,808	9,047,426	1894	13,037,961	11,401,142
1849	4,981,584	5,402,371	1872	15,435,323	8,008,125	1895	10,366,052	9,387,159
1850	5,222,029	5,877,319	1873	13,564,815	8,500,553	1896	12,183,790	12,222,935
1851	6,073,870	5,761,975	1874	13,249,355	7,111,636	1897	10,725,563	11,155,962
1852	6,298,396	4,652,340	1875	13,364,131	7,693,281	1899	9,805,919	10,156,541
1853	5,335,910	5,299,327	1876	13,324,865	7,085,563	1900	9,989,505	6,612,499
1854	5,536,681	5,062,017	1877	13,119,847	10,460,959	1901	8,918,136	8,643,816
1855	5,785,891	4,971,715	1878	13,133,982	13,129,927	1902	13,209,610	12,433,956
1856	6,571,160	5,371,804	1879	14,426,905	10,647,193	1903	14,449,286	15,089,079
1857	7,999,005	4,429,350	1880	12,753,189	7,779,078	1904	13,169,029	16,205,903
1858	7,456,364	5,357,155	1881	10,884,749	11,736,276	1905	16,536,259	18,709,565
1859	6,764,673	4,289,494	1882	13,299,375	10,397,113	1906	21,827,665	23,257,530
1860	7,545,957	5,454,057	1883	11,977,275	10,258,669			
1861	8,676,811	6,063,445	1884	11,340,494	10,033,577			

[NOTE.—Figures prior to 1900 are from the Report of the Porto Rico Chamber of Commerce for 1904; those for 1901 and subsequent years from the tables prepared by the Bureau of Statistics. The figures for 1879 to 1897, inclusive, have been converted into gold values by the aid of the rates of exchange given in the table on page 62. The years 1836 to 1900 are calendar years, 1901 to 1906 are fiscal years ending June 30 of the respective years. In 1901 and subsequent years the values given are those of domestic and foreign exports, exclusive of gold and silver bullion and specie; prior to 1901 such discrimination is impracticable.]

COMMERCE OF THE UNITED STATES WITH PORTO RICO, BY CUSTOMS DISTRICTS AND ARTICLES, YEARS ENDED JUNE 30, 1901 TO 1906.

SHIPMENTS FROM THE UNITED STATES TO PORTO RICO, BY CUSTOMS DISTRICTS.

CUSTOMS DISTRICT.	1901	1902	1903	1904	1905	1906
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Baltimore, Md.	12,247	31,197	1,592		45,675	25,386
Boston and Charlestown, Mass.	10,649				5,264	20,644
Brunswick, Ga.		3,408				
Fernandina, Fla.	7,564	6,825	5,054			
New York, N. Y.	5,559,220	8,506,393	8,872,547	7,340,548	9,509,024	13,831,196
Norfolk and Portsmouth, Va.	3,548		58,318	91,802	43,449	38,015
Philadelphia, Pa.	41,417	43,543	80,276	64,141	111,474	117,222
Portland and Falmouth, Me.	34,664		50,557	16,994	23,639	
St. Johns, Fla.	4,063	10,953	25,979	33,599	49,807	34,008
Savannah, Ga.		2,750			5,265	6,007
Wilmington, N. C.	11,739	17,276	5,220	9,459	10,060	10,500
Apalachicola, Fla.	1,995					
Galveston, Tex.	22,965					
Mobile, Ala.		8,250	8,025	10,594	8,914	111,327
New Orleans, La.	1,133,315	2,056,727	2,845,193	3,140,967	3,557,010	4,367,827
Pearl River, Miss.	18,531	34,872	20,623	18,911	9,438	75,214
Pensacola, Fla.					8,438	11,645
Total domestic shipments.	6,861,917	10,719,444	11,976,134	10,727,015	13,387,457	18,648,991
Total foreign shipments.	103,491	163,209	269,711	483,045	586,613	575,890
Total shipments to Porto Rico.	6,965,408	10,882,653	12,245,845	11,210,060	13,974,070	19,224,881

SHIPMENTS FROM PORTO RICO TO THE UNITED STATES, BY PRINCIPAL ARTICLES.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
DOMESTIC SHIPMENTS.		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>
Coffee, green or raw . . . lbs.	29,565	4,305	227,560	27,031	6,314,686	718,531	2,415,559	279,461	1,519,149	201,642	303,455	27,069
Cotton, unmanufactured:												
Sea island . . . lbs.							126,722	15,601	399,481	105,870	518,411	122,520
Fruits and nuts:												
Oranges . . . lbs.		84,388		51,364		230,589		352,394		125,311		295,585
All other . . . lbs.		20,889		19,507		56,994		74,585		125,536		201,109
Hides and skins, other than												
fur skins . . . lbs.	357,606	38,976	654,322	67,888	697,698	85,916	330,338	41,424	668,659	82,640	817,156	112,665
Perfumery and cosmetics.		18,979		9,545		629		17,164		23,426		27,771
Straw and palm leaf, manu-												
factures of . . . lbs.		38,197		176,412		40,198		53,293		89,155		109,054
Sugar and molasses:												
Molasses . . . galls.	1,231,654	251,155	1,613,915	322,636	2,773,914	376,757	1,839,055	308,115	2,843,110	251,286	3,794,938	345,733
Sugar, brown . . . lbs.	137,201,828	4,695,104	183,817,049	5,890,089	226,143,508	7,467,579	259,231,607	8,688,951	271,319,993	11,925,575	410,544,618	14,184,319
Tobacco:												
Unmanufactured: Leaf												
. . . lbs.	525,834	116,944	601,250	107,203	770,224	135,080	2,385,498	260,813	2,195,723	421,652	1,396,533	476,539
Manufactures of: Cigars												
. . . M.	11,013	296,021	70,053	1,543,253	67,243	1,746,483	59,185	1,454,784	87,569	2,146,846	113,223	3,069,576
All other articles . . . M.		13,330		82,494		50,391		30,327		28,326		83,534
Total domestic ship-												
ments . . . lbs.		5,581,288		8,297,422		10,909,147		11,576,912		15,527,265		19,055,474
Total foreign shipments.		59,849		81,344		142,048		145,914		105,880		86,987
Total merchandise.		5,641,137		8,378,766		11,051,195		11,722,826		15,633,145		19,142,461

COMMERCIAL PORTO RICO IN 1906.

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COMMERCE OF THE UNITED STATES WITH PORTO RICO, BY CUSTOMS DISTRICTS AND ARTICLES, YEARS ENDED JUNE 30, 1901 TO 1906—Continued.

SHIPMENTS FROM THE UNITED STATES TO PORTO RICO, BY PRINCIPAL ARTICLES.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
DOMESTIC SHIPMENTS.		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>
Agricultural implements.....		8,132		16,983		16,543		15,508		32,247		42,365
Animals.....		3,191		21,716		1,929		1,859		13,117		52,646
Books, maps, engravings, etchings, etc.....		40,904		69,840		76,135		71,577		64,414		83,063
Breadstuffs:												
Bread and biscuit.....lbs..	668,805	29,688	1,037,506	52,503	1,128,986	63,014	1,425,330	63,610	2,308,168	118,558	2,832,587	139,644
Corn meal.....bbls..	29,989	62,083	6,179	20,187	8,543	27,231	6,567	21,225	7,391	21,213	12,619	34,722
Wheat flour.....bbls..	219,776	820,253	242,861	938,683	268,009	1,052,630	226,630	983,151	200,099	1,089,305	248,025	1,181,114
All other.....		22,985		28,706		42,438		16,708		26,405		39,777
Total.....		935,009		1,040,079		1,185,313		1,084,694		1,255,481		1,395,257
Candles.....lbs..	375,818	32,511	658,408	51,385	877,577	66,782	909,859	70,972	1,037,007	84,773	958,452	77,281
Cars, carriages, other vehicles and parts of:												
Cars, passenger and freight and parts of.....		54,227		74,561		94,567		81,715		37,965		260,040
All other.....		16,313		57,441		40,940		40,788		103,956		103,403
Cement.....bbls..	6,907	11,712	23,623	41,165	29,455	55,133	27,931	41,212	45,234	59,394	64,247	85,997
Chemicals, drugs, dyes, and medicines.....		89,236		135,846		141,790		139,996		164,990		201,472
Coal: Bituminous.....tons..	19,055	51,210	22,626	62,793	48,375	158,390	75,121	235,561	68,730	197,702	58,974	169,292
Cocoa, ground or prepared, and chocolate.....		3,102		13,630		23,655		16,079		17,608		21,240
Copper, manufactures of.....		6,169		15,574		26,973		7,909		20,636		30,336
Cotton, manufactures of:												
Cloths—												
Colored.....yds..	13,649,707	659,725	15,557,706	792,083	17,343,887	917,102	13,071,477	687,054	22,738,134	1,162,073	21,580,774	1,220,247
Uncolored.....yds..	8,562,480	510,661	7,219,903	440,836	9,777,378	569,102	6,424,921	403,022	8,027,372	466,194	6,116,945	371,230
Wearing apparel.....		101,701		445,951		219,889		203,061		253,841		279,650
All other.....		112,794		381,956		338,377		376,868		419,616		547,994
Earthen, stone and china ware.....		5,733		11,296		19,599		19,207		26,637		39,878
Fertilizers.....tons..	570	18,804	326	11,965	1,060	38,074	1,826	88,563	4,173	184,653	5,504	246,002
Fibers, vegetable, etc., manufactures of.....		19,072		30,100		47,265		73,842		79,603		143,901
Fish:												
Dried, smoked, or cured—Cod, haddock, hake, and pollock.....lbs..	6,107,758	254,154	5,310,523	228,496	3,399,536	160,285	2,595,584	137,898	4,109,814	204,914	8,567,919	436,108
All other.....		60,341		72,207		36,085		16,208		41,025		78,794
Fruits and nuts.....		20,473		26,458		31,939		29,456		36,997		49,579
Furniture of metal.....		6,824		11,103		15,254		18,207		22,992		27,160
Furs and fur skins.....		2,679		7,608		7,608		18,462		18,462		41,275
Glass and glassware.....		19,830		28,116		33,943		40,063		58,582		69,734
India rubber, manufactures of.....		9,354		19,606		18,686		26,136		30,254		50,268
Instruments and apparatus for scientific purposes, etc.....		28,377		81,904		59,523		44,408		47,726		88,860
Iron and steel and manufactures of:												
Rails for railways: Steel, tons..	601	20,436	1,929	57,006	910	30,472	455	14,632	3,142	83,567	4,647	132,756
Shovels and plates.....lbs..	443,460	14,139	858,345	30,426	1,007,780	33,054	2,579,389	79,344	601,248	16,695	5,116,108	148,905
Structural iron and steel.....tons..	207	10,726	949	56,013	141	10,281	55	4,018	128	9,058	1,263	72,031
Wire.....lbs..	816,888	19,452	907,881	22,626	1,337,865	39,256	999,559	27,143	1,990,446	54,088	2,296,320	55,734
Builders' hardware, saws and tools.....		36,784		72,351		76,181		52,052		53,651		75,526
Machinery, machines, and parts of—												
Pumps and pumping machinery.....		11,417		17,200		48,975		29,637		49,471		159,513
Sewing machines and parts of.....		6,285		15,660		93,190		91,931		145,430		198,446
Steam engines and parts of—												
Locomotives.....no..	1	5,000	2	9,790	5	38,100			7	70,500	16	65,916
All other and parts of.....		37,383		69,720		76,570		134,314		92,144		238,308
All other.....		128,825		576,276		562,939		281,650		501,170		1,185,982
Nails and spikes: Wire.....lbs..	431,831	8,702	685,370	13,793	1,030,778	20,579	1,079,813	23,766	1,247,925	26,806	1,618,887	36,294
Pipes and fittings.....lbs..	(a)	38,547	(a)	90,382	(a)	131,400	(a)	67,607	(a)	101,542	(a)	232,323
All other.....		93,881		139,893		273,553		206,967		351,562		638,825
Total.....		431,577		1,171,136		1,434,350		1,013,061		1,555,684		3,240,649
Leather and manufactures of:												
Leather.....		10,854		24,632		29,813		32,222		41,640		63,350
Manufactures of.....		75,870		209,699		280,073		251,739		295,082		378,302
Meat and dairy products:												
Meat products—												
Hams.....lbs..	641,308	55,623	1,210,237	115,615	1,499,694	165,477	1,616,821	149,051	2,220,918	215,159	2,958,931	317,877
Pork, salted or pickled.....lbs..	4,576,737	296,409	4,239,820	363,193	4,054,476	373,116	4,081,313	329,838	5,406,542	395,496	6,299,513	481,367
Lard.....lbs..	4,085,873	289,671	5,488,414	488,986	3,790,611	365,861	3,272,058	241,865	3,841,451	261,217	3,703,587	273,350
Lard compounds and substitutes.....lbs..	120,756	7,593	67,840	5,116	2,147,564	160,168	2,484,266	171,098	3,618,453	227,353	4,146,249	255,046
Sausage and sausage meats.....lbs..	187,968	18,450	308,443	32,047	432,207	47,964	380,263	43,091	682,166	67,239	1,159,120	109,846
All other.....		181,588		177,240		141,130		69,356		43,227		73,374
Dairy products—												
Butter.....lbs..	247,397	34,170	288,496	41,519	454,656	82,054	409,006	67,119	334,752	51,471	548,741	86,550
Cheese.....lbs..	650,289	74,621	939,452	104,966	891,742	112,953	805,222	101,244	963,965	118,605	1,098,455	146,310
Milk.....		2,876		7,964		14,398		19,354		27,962		53,951
Total.....		961,001		1,336,646		1,463,121		1,192,016		1,407,729		1,800,671

^a Quantity not stated prior to July 1, 1905.

COMMERCIAL PORTO RICO IN 1906.

COMMERCE OF THE UNITED STATES WITH PORTO RICO, BY CUSTOMS DISTRICTS AND ARTICLES, YEARS ENDED JUNE 30, 1901 TO 1906—Continued.

SHIPMENTS FROM THE UNITED STATES TO PORTO RICO, BY PRINCIPAL ARTICLES—Continued.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
DOMESTIC SHIPMENTS—cont'd.												
Oil:												
Mineral, refined — Illuminating.....gals.	684,480	Dollars. 69,829	923,644	Dollars. 91,980	892,990	Dollars. 97,163	1,176,118	Dollars. 143,343	1,062,052	Dollars. 117,199	1,372,975	Dollars. 140,890
Vegetable.....gals.		11,965		21,864		33,549		38,912		46,079		50,859
Paints, pigments, and colors.....		13,865		29,997		35,006		31,127		39,837		51,386
Paper and manufactures of.....		66,507		110,222		116,892		115,296		170,158		171,812
Rice.....lbs.	36,807,682	1,309,725	50,520,750	1,803,065	60,583,001	2,255,429	64,340,385	2,326,127	80,838,816	2,508,724	92,241,934	3,347,101
Silk, manufactures of.....		1,620		9,464		53,366		57,485		74,444		97,718
Soap.....		27,348		44,898		94,371		141,599		168,931		247,038
Spirits, wines and malt liquors:												
Malt liquors: in bottles, doz. qts.	38,040	55,115	77,356	110,051	107,179	148,850	72,015	100,840	104,546	119,550	111,019	159,093
Spirits, distilled.....pf. galls.	982	1,727	2,506	3,962	3,704	7,041	1,983	4,330	1,891	5,856	2,511	8,070
Wines.....		20,462		36,705		40,501		48,379		616		82,608
Straw and palm leaf, manufactures of.....		11,480		31,366		15,518		31,700		34,064		43,238
Sugar, refined.....lbs.	269,102	14,684	1,559,560	70,525	2,044,584	95,976	2,130,128	99,373	2,194,420	118,836	3,182,173	151,590
Tin, manufactures of.....		4,415		16,278		12,757		26,518		25,761		25,899
Tobacco, unmanufactured: Leaf.....lbs.	139,230	24,415	342,490	93,718	283,873	140,666	195,309	82,711	500,438	166,584	999,018	361,392
Vegetables:												
Beans and pease.....bush.	22,617	32,055	83,764	166,741	42,316	106,007	22,463	46,573	24,688	45,804	86,238	194,165
Potatoes.....bush.	76,863	55,519	41,736	42,031	73,416	63,926	63,428	62,840	90,689	67,041	133,062	104,876
All other.....		13,190		22,678		27,865		18,819		24,720		34,901
Wood, and manufactures of:												
Lumber—												
Boards, deals, and planks, M ft.	5,001	80,034	6,206	101,021	6,805	129,300	6,666	115,845	8,587	143,532	13,801	265,698
Shooks.....		101,456		87,032		81,674		84,182		123,048		69,276
All other.....		26,782		61,976		28,425		18,801		17,854		60,275
Furniture.....		85,259		132,830		108,864		75,924		93,916		136,572
All other.....		16,454		177,222		190,473		141,478		200,607		292,679
Wool, manufactures of.....		8,764		81,056		80,962		92,957		133,811		140,807
All other articles.....		250,386		447,559		408,236		353,347		534,498		705,284
Total domestic shipments.....		6,861,917		10,719,444		11,976,134		10,727,015		13,387,457		18,648,991
Total foreign shipments.....		103,491		163,209		269,711		483,045		586,613		575,890
Total merchandise.....		6,965,408		10,882,653		12,245,845		11,210,060		13,974,070		19,224,881

SHIPMENTS OF GOLD AND SILVER.

YEAR. ^a	FROM THE UNITED STATES TO PORTO RICO.				FROM PORTO RICO TO THE UNITED STATES.			
	Gold.		Silver.		Gold.		Silver.	
	Coin.	Bullion.	Coin.	Bullion.	Coin.	Bullion.	Coin.	Bullion.
	Dollars. 979	Dollars.	Dollars. 2,000	Dollars.	Dollars. 2,883	Dollars.	Dollars. 1,282	Dollars.
1903.....					3,010			
1904.....					1,032	660	317	
1905.....			66,250		1,110		78	
1906.....								

^a No data available in 1901 and 1902.RATES OF UNITED STATES DOLLARS (NEW YORK EXCHANGE AT SIGHT) IN PORTO RICO, 1879 TO 1900. ^a

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1879 ^b	7	7	7	8	10	10	11	11	10	10	9	7
1880 ^b	9	9	9	9	10	11	11	11	12	12	10	10
1881 ^b	10	9	9	8	8	9	11	12	13	13	13	12
1882 ^b	11	11	10	10	10	11	12	12	12	13	13	12
1883 ^b	13	13	13	13	13	15	17	17	17	17	17	17
1884 ^b	17	16	16	15	14	15	16	17	16	16	17	15
1885 ^b	15	14	13	13	15	15	16	18	19	20	21	21
1886 ^b	20	20	18	17	19	23	25	25	25	25	25	26
1887 ^b	24	24	23	22	22	24	27	28	28	26	18	12
1888 ^b	13	14	18	19	20	23	21	21	23	24	20	20
1889 ^b	20	21	21	21	23	29	28	27	26	24	18	20
1890 ^b	20	23	22	23	26	26	23	16	14	16	16	17
1891 ^b	20	19	19	19	20	20	21	21	21	21	21	21
1892 ^b	21	21	22	25	25	27	28	31	29	29	28	28
1893 ^b	28	28	33	33	36	44	43	39	39	39	41	41
1894 ^b	41	45	49	52	52	52	53	55	55	55	55	57
1895 ^b	68	73	59	65	73	73	73	71	71	71	61	62
1896 ^c	53	51	49	49	50	59	60	60	60	58	58	60
1897 ^c	61	61	65	67	67	67	73	72	68	68	61	68
1898 ^c	69	73	75	83	103	113	133	96	76	73	73	67
1899 ^c	63	65	65	63	62	65	65	68	68	68	65	66
1900 ^c	67	67	67	67	67	67		d Par.	d Par.	d Par.	d Par.	d Par.

^a 7 per cent means that 107 pesos had to be paid for 100 dollars.
^b Mexican silver.^c Porto Rican silver.
^d From August United States coin.

COMMERCIAL PORTO RICO IN 1906.

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TOTAL VALUES OF IMPORTS AND EXPORTS OF MERCHANDISE, DOMESTIC AND FOREIGN, INTO AND FROM PORTO RICO, 1887 TO 1906.^a

[Values prior to 1899 were reduced to a gold basis, calculated by average monthly rates of exchange at San Juan in the years named.]

YEAR.	IMPORTS.			EXPORTS.			Excess of imports (—) or exports (+).
	From United States.	From other countries.	Total.	To United States.	To other countries.	Total.	
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1887.....	2,317,681	6,023,107	8,340,788	3,614,666	4,997,106	8,611,772	+ 270,984
1888.....	2,784,054	8,826,343	11,610,397	2,587,282	7,094,391	9,681,673	— 1,928,724
1889.....	2,961,645	8,152,378	11,114,023	2,371,233	6,304,112	8,675,345	— 2,438,678
1890.....	3,094,257	11,553,804	14,648,061	2,008,385	6,597,486	8,605,871	— 6,042,190
1891.....	2,894,691	10,644,824	13,539,515	1,895,892	6,040,871	7,936,763	— 5,642,752
1892.....	^b 2,856,003	10,807,099	13,663,102	^c 3,248,007	9,750,651	12,998,658	— 664,444
1893.....	3,209,937	8,990,236	12,200,173	1,889,238	9,905,874	11,795,112	— 405,061
1894.....	3,086,832	9,494,800	12,581,632	1,547,705	9,454,398	11,002,103	— 1,579,529
1895.....	2,259,838	7,743,402	10,003,240	1,803,451	7,255,158	9,058,609	— 944,631
1896.....	2,555,534	9,201,823	11,757,357	1,641,269	10,153,862	11,795,131	+ 37,774
1897.....	^b 1,988,888		^d 10,725,563	^e 2,181,024		^d 11,155,963	+ 430,400
1898.....	^b 1,505,946			^e 2,414,356			
1899.....	3,954,369	5,851,547	9,805,916	3,457,557	6,698,984	10,156,541	+ 350,625
1900.....	6,952,114	3,037,391	9,989,505	3,350,577	3,261,922	6,612,499	+ 3,377,006
1901.....	6,965,408	1,952,728	8,918,136	5,641,137	3,002,679	8,643,816	— 274,320
1902.....	^h 10,882,653	2,326,957	13,209,610	ⁱ 8,378,766	4,055,190	12,433,956	— 775,654
1903.....	^h 12,245,845	2,203,441	14,449,286	ⁱ 11,051,195	4,037,884	15,089,079	+ 639,793
1904.....	^h 11,210,060	1,958,969	13,169,029	ⁱ 11,722,826	4,543,077	16,265,903	+ 3,096,874
1905.....	^h 13,974,070	2,562,189	16,536,259	ⁱ 15,633,145	3,076,420	18,709,565	+ 2,173,306
1906.....	^h 19,224,881	2,602,784	21,827,665	ⁱ 19,142,461	4,115,069	23,257,530	+ 1,429,865

^a 1887 to 1896 calendar years; from Bulletin No. 13, 1898, Department of Agriculture.

^b Exports from United States to Porto Rico; fiscal year.

^c Imports into United States from Porto Rico; fiscal year.

^d Calendar year; from report of San Juan Chamber of Commerce, for the year 1904.

^e Calendar year; figures include coin and bullion, imported, \$115,279; exported, \$104,963. From report of War Department.

^f Calendar year. From Monthly Summary of Commerce and Finance, Bureau of Statistics, July 1901.

^g Fiscal years.

^h Shipments to Porto Rico.

ⁱ Shipments from Porto Rico.

TOTAL VALUES OF MERCHANDISE IMPORTED INTO AND EXPORTED FROM PORTO RICO IN ITS TRADE WITH COUNTRIES OTHER THAN THE UNITED STATES, YEARS ENDED JUNE 30, 1901 TO 1906.

COUNTRY.	IMPORTS.						EXPORTS.					
	1901	1902	1903	1904	1905	1906	1901	1902	1903	1904	1905	1906
EUROPE:	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Austria-Hungary.....	13,245	17,945	17,315	10,251	4,518	18,589	55,979	342,071	267,533	469,778	102,073	274,932
Belgium.....	8,922	6,427	17,311	4,482	68,520	111,939	1,619	6,192	1,362	7,327	969	11,723
Denmark.....	12,217	14,949	21,063	16,385	24,373	34,668	18,697	3,818	17,591	1,974	2,425	7,465
France.....	166,723	173,348	259,992	178,235	330,176	345,785	473,470	1,479,932	1,294,578	1,578,536	382,828	634,311
Germany.....	152,201	202,040	155,917	100,160	105,290	148,971	140,772	326,422	342,827	354,212	47,774	136,106
Gibraltar.....							5,441	4,077	12,865	5,420	2,864	8,076
Italy.....	19,552	19,838	15,463	30,884	25,952	38,812	88,935	221,135	250,581	184,333	139,483	210,011
Netherlands.....	61,838	12,243	7,120	13,579	24,012	48,181	1,405	19,665	17,828	34,808		39,898
Portugal.....			440	730	260	97						
Russia in Europe.....									18			
Spain.....	808,441	869,479	793,061	627,982	578,931	642,200	596,023	576,496	756,523	645,998	538,430	813,479
Sweden and Norway—												
Norway.....												
Sweden.....	1,884						3,965	17,413	5,454	8,236	1,222	4,335
Switzerland.....	437	871	800	4,532	784	50						
United Kingdom.....	374,837	401,037	318,839	243,768	235,406	264,112	3,990	17,982	4,021	625	41,548	134,380
NORTH AMERICA:												
Nova Scotia, New Brunswick, etc.....	294,067	441,678	390,140	400,387	525,217	575,787	288,612	249,915	288,065	313,929	329,638	166,513
Quebec, Ontario, Manitoba, etc.....					1,000		53,087					
British Honduras.....	12											
Mexico.....				4,192	12,673	22,857		20		1,534	5,009	936
West Indies—												
British.....	108	927		2,756	2,321	550	56,371	62,544	43,441	38,133	53,594	23,659
Cuba.....	2,958	15,689	5,482	30,596	7,967	61,529	1,110,048	648,518	611,199	835,722	1,355,123	1,582,904
Danish.....	1,564	2,249	11,709	12,880	2,852	6,629	16,094	22,670	17,045	9,956	12,112	11,141
Dutch.....	14,165	4,883	22,417	8,271	5,949	1,372	4,916	6,044	6,427	10,413	19,743	3,439
French.....	24	511		18			42,483	32,382	26,787	12,815	1,266	669
Haiti.....	79	20					503	19	26	555	876	553
Santo Domingo.....	2,086	9,066	6,055	3,931	14,153	11,989	38,954	17,472	19,518	20,339	26,697	46,914
SOUTH AMERICA:												
Argentina.....		70,294	21,012	3,831	74,427	24,839	15					
Colombia.....		136	1,611	8,435	10,042	250	300	375		179	542	330
Ecuador.....				468	131							
Guiana—												
British.....											86	78
French.....									42,148	7,970		
Paraguay.....			956									
Uruguay.....		39,796	96,606	184,734	65,316	93,273	666		828			
Venezuela.....	7,384	6,321	1,020	15,389	316,748	20,809	334	28	1,425	285	12,118	599
ASIA:												
East Indies—British.....	9,984	9,221	22,321	10,502	88,697	98,078						
AFRICA:												
Canary Islands.....		7,980	16,791	41,591	36,474	31,328			794			
French Africa.....												2,618
Total.....	1,952,728	2,326,957	2,203,441	1,958,969	2,562,189	2,602,784	3,002,679	4,055,190	4,037,884	4,543,077	3,076,420	4,115,069
RECAPITULATION.												
Europe.....	1,620,297	1,718,177	1,607,321	1,230,988	1,398,222	1,653,404	1,390,296	3,015,203	2,980,181	3,291,247	1,259,616	2,274,716
North America.....	315,063	475,032	435,803	463,031	572,132	680,713	1,611,068	1,039,584	1,012,508	1,243,396	1,804,058	1,836,728
South America.....	7,384	116,547	121,205	212,857	466,664	139,261	1,315	403	44,401	8,434	12,746	1,007
Asia.....	9,984	9,221	22,321	10,502	88,697	98,078						
Africa.....		7,980	16,791	41,591	36,474	31,328			794			2,618

IMPORTS AND EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE INTO AND FROM PORTO RICO DURING THE YEARS ENDED JUNE 30, 1901 TO 1906, SHOWING PRINCIPAL COUNTRIES FROM WHICH IMPORTED AND TO WHICH EXPORTED.

[Does not include trade with the United States.]

IMPORTS.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Breadstuffs:												
Macaroni, vermicelli, and all similar preparations ^a —												
Imported from—		Dollars.		Dollars.		Dollars.		Dollars.		Dollars.		Dollars.
Italy.....lbs.					24,426	1,417	13,364	756	20,252	1,096	22,984	1,350
Spain.....lbs.					21,600	1,162	28,748	1,563	39,031	2,027	58,680	3,110
Other countries.....lbs.									300	14	462	24
Total.....lbs.					46,026	2,579	42,112	2,319	59,583	3,137	82,126	4,484
All other.....		11,028		12,763		12,624		12,767		22,634		29,669
Total breadstuffs.....		11,028		12,763		15,203		15,086		25,771		34,153
Cement: Roman, Portland, and other hydraulic:												
Imported from—												
Germany.....lbs.	8,807,585	34,783	1,465,309	7,402	2,521,043	13,478	2,007,117	9,763	610,378	2,329	158,766	610
Other countries.....lbs.	233,989	821	96,223	466							778,000	2,215
Total.....lbs.	9,041,574	35,604	1,561,532	7,868	2,521,043	13,478	2,007,117	9,763	610,378	2,329	936,766	2,825
Chemicals, drugs, and dyes:												
Imported from—												
France.....		27,799		30,741		30,991		31,112		33,070		48,681
Germany.....		4,695		8,564		4,504		3,082		4,356		3,829
Italy.....		3,304		10,565		4,229		9,577		6,471		11,806
Spain.....		4,851		6,009		5,132		4,409		4,034		10,420
United Kingdom.....		5,381		3,522		4,175		6,406		3,431		5,396
Other countries.....		4,692		1,939		1,319		1,788		572		899
Total.....		50,722		61,340		50,350		56,374		51,934		81,031
Chocolate, prepared or manufactured, not including confectionery:												
Imported from—												
France.....lbs.	17,812	3,610	35,346	7,097	48,414	9,249	51,267	9,705	48,307	11,600	94,811	24,154
United Kingdom.....lbs.	2,496	475	5,740	1,137	6,286	1,378	4,308	896	4,141	1,032	8,154	1,655
Other countries.....lbs.	6,147	806	15,537	2,024	2,615	614	1,412	366	868	247	2,438	647
Total.....lbs.	26,455	4,891	56,623	10,258	57,315	11,241	56,987	10,967	53,316	12,879	105,403	26,456
Coffee:												
Imported from—												
Venezuela.....lbs.							154,233	12,338	4,703,896	312,083	210,628	14,744
Other countries.....lbs.											2,300	230
Total.....lbs.							154,233	12,338	4,703,896	312,083	212,928	14,974
Cotton, manufactures of:												
Cloths, bleached, dyed, colored, stained, painted, or printed—												
Imported from—												
France.....lbs.	82,424	7,864	13,472	1,934	31,585	3,829	39,420	6,331	24,872	3,826	16,584	2,223
Germany.....lbs.	14,727	1,210									5,132	897
Spain.....lbs.	156,904	18,007	135,343	20,342	117,777	23,409	163,327	29,168	109,085	20,081	138,083	25,117
United Kingdom.....lbs.	757,298	47,365	102,382	8,595	69,509	6,966	33,438	4,174	19,762	2,828	18,934	2,997
Other countries.....lbs.	14,860	1,632	72	10							58,602	9,964
Total.....lbs.	1,026,213	76,078	251,269	30,881	218,871	34,204	236,185	39,673	153,719	26,735	237,335	41,198
All other.....		157,064		88,594		83,318		83,909		75,012		102,789
Total manufactures of cotton.....		233,142		119,475		117,522		123,582		101,747		143,987
Earthen, stone, and china ware:												
Imported from—												
Germany.....		9,413		16,421		13,844		9,514		5,226		9,174
Other countries.....		9,639		9,459		24,391		5,053		7,150		10,432
Total.....		19,052		25,880		38,235		14,567		12,376		19,606
Fibers, vegetable, and textile grasses, and manufactures of:												
Imported from—												
France.....		1,754		1,196		5,539		4,090		2,030		2,191
Germany.....		4,957		9,936		9,022		2,212		1,373		1,373
Spain.....		27,460		20,303		14,992		13,844		16,478		25,525
United Kingdom.....		72,355		82,630		64,208		88,957		55,849		48,873
East Indies—British.....		9,984		9,221		22,321		10,502		88,697		98,078
Other countries.....		314		590		601		1,247		1,839		3,057
Total.....		116,854		123,876		116,683		120,857		166,500		179,097

^a Included under "All other" prior to 1903.

IMPORTS AND EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE INTO AND FROM PORTO RICO DURING THE YEARS ENDED JUNE 30, 1901 TO 1906, SHOWING PRINCIPAL COUNTRIES FROM WHICH IMPORTED AND TO WHICH EXPORTED—Continued.

IMPORTS—Continued.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Fish:												
Cod, haddock, hake, and pollock, dried, smoked, salted, or pickled—												
Imported from—												
Nova Scotia, New Brunswick, etc.....lbs.	6,394,075	Dollars. 251,061	8,868,411	Dollars. 367,612	7,774,191	Dollars. 326,459	6,274,489	Dollars. 310,655	7,374,704	Dollars. 410,662	7,904,986	Dollars. 460,044
Other countries.....lbs.	15,450	1,101	11,129	820	10,004	718	10,565	821	8,760	745	8,881	816
Total.....lbs.	6,409,525	252,162	8,879,540	367,832	7,784,195	327,177	6,285,054	310,876	7,383,464	411,407	7,913,867	460,860
Herring—												
Dried or smoked—												
Imported from—												
Nova Scotia, New Brunswick, etc.....lbs.	93,775	2,291	24,000	385			332,881	6,687	263,200	5,831		
Other countries.....lbs.	217	9										
Total.....lbs.	93,992	2,300	24,000	385			332,881	6,687	263,200	5,831		
Pickled or salted—												
Imported from—												
Nova Scotia, New Brunswick, etc.....lbs.	465,520	9,177	627,353	13,418	735,040	18,602	1,550,206	30,073	1,466,330	33,158	1,169,674	30,224
Other countries.....lbs.	1,582	59					38,075	1,034				
Total.....lbs.	467,102	9,236	627,353	13,418	735,040	18,602	1,588,281	31,107	1,466,330	33,158	1,169,674	30,224
All other.....		6,414		16,330		17,985		14,589		20,044		23,649
Total fish.....		270,112		397,965		363,764		363,259		470,440		514,733
Fruits and nuts:												
Imported from—												
Spain.....		31,237		36,809		31,482		32,986		27,755		30,107
Other countries.....		3,763		1,579		1,784		1,305		2,100		2,059
Total.....		35,000		38,388		33,266		34,381		29,855		32,166
Glass and glassware:												
Bottles, vials, demijohns, carboys, and jars—												
Imported from—												
France.....		281		1,213		964		1,108		1,800		1,612
Spain.....		765		954		2,098		2,184		4,950		7,279
Other countries.....		1,950		1,089		1,153		559		545		655
Total.....		2,996		3,256		4,215		3,851		7,295		9,546
All other.....		6,924		6,609		9,064		4,571		3,728		7,612
Total glass and glassware.....		9,920		9,865		13,279		8,422		11,023		17,158
Iron and steel, and manufactures of:												
Building forms and all other structural shapes fitted for use ^a —												
Imported from—												
Belgium.....lbs.									279,599	5,566	1,505,944	29,417
France.....lbs.									281,028	7,976		
Germany.....lbs.									120,363	2,514		
United Kingdom.....lbs.									7,001	331		
Total.....lbs.									687,991	16,387	1,505,944	29,417
All other.....		104,813		205,966		178,716		61,363		204,264		132,640
Total iron and steel, and manufactures of.....		104,813		205,966		178,716		61,363		220,651		162,057
Leather, and manufactures of:												
Imported from—												
Spain.....		146,174		117,483		98,673		99,559		74,891		82,037
Other countries.....		6,170		7,221		7,284		4,360		7,674		10,795
Total.....		152,344		124,704		105,957		103,919		82,565		92,832
Meat and dairy products:												
Imported from—												
Denmark.....		9,174		12,397		20,471		13,479		23,742		33,991
Germany.....		2,790		5,270		8,632		3,681		5,676		7,349
Netherlands.....		17,464		6,111		5,102		13,208		23,744		47,882
United Kingdom.....		20,942		55,584		48,725		1,422		1,538		1,856
Argentina.....				70,294		21,012		3,831		74,427		24,619
Uruguay.....				39,796		91,174		177,442		62,811		85,211
Other countries.....		21,938		12,514		19,881		8,316		9,686		11,451
Total.....		72,308		201,966		214,997		221,379		201,624		212,359

^a Included under "All other" prior to 1905.

IMPORTS AND EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE INTO AND FROM PORTO RICO DURING THE YEARS ENDED JUNE 30, 1901 TO 1906, SHOWING PRINCIPAL COUNTRIES FROM WHICH IMPORTED AND TO WHICH EXPORTED—Continued.

IMPORTS—Continued.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Metals, metal compositions, and manufactures of, n. e. s.:												
Imported from—		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>
Belgium.....		12		195		38				6,690		13,554
France.....		1,711		4,280		10,606		4,076		7,149		7,927
Germany.....		1,942		4,097		5,302		5,028		6,794		12,630
United Kingdom.....		2,199		39,759		42,339		22,860		45,139		61,314
Other countries.....		1,324		1,514		1,394		944		1,135		2,615
Total.....		7,188		49,845		59,679		32,908		66,907		98,040
Oils:												
Olive, other than for manufactur-												
ing or mechanical purposes:												
Imported from—												
Spain.....galls..	17,081	17,638	88,821	68,600	79,117	48,549	83,961	50,269	96,126	54,885	92,356	63,884
Other countries.....galls..	1,059	1,436	1,294	1,804	1,652	1,653	1,274	1,487	697	974	1,127	1,642
Total.....galls..	18,140	19,074	90,115	70,404	80,769	50,202	85,235	51,756	96,823	55,859	93,483	65,526
All other.....		10,432		12,416		8,108		6,487		5,815		5,759
Total oils.....		29,506		82,820		58,310		58,243		61,674		71,285
Paints, pigments, and colors:												
Imported from—												
France.....		145		224		446		42		1,425		31
United Kingdom.....		11,198		9,793		6,315		6,898		12,387		9,563
Other countries.....		1,148		818		1,225		1,298		974		1,225
Total.....		12,491		10,835		7,986		8,238		14,786		10,819
Paper, and manufactures of:												
Imported from—												
France.....		1,991		3,294		3,917		4,652		2,886		2,490
Germany.....		6,286		3,159		2,642		3,477		2,533		2,674
Spain.....		36,888		32,729		24,748		31,424		37,213		45,590
Other countries.....		1,913		1,439		1,404		1,134		621		1,506
Total.....		47,078		40,621		32,711		40,687		43,253		52,260
Perfumery, cosmetics, and all toilet preparations:												
Imported from—												
France.....		8,093		12,190		15,172		15,286		13,402		18,689
Other countries.....		1,066		1,642		1,088		1,318		872		731
Total.....		9,159		13,832		16,260		16,604		14,274		19,420
Pipes and smokers' articles:												
Imported from—												
Spain.....		5,403		14,430		12,874		9,238		10,157		12,904
Other countries.....		1,085		810		702		780		408		1,327
Total.....		6,488		15,240		13,576		10,018		10,565		14,231
Rice:												
Imported from—												
Spain.....lbs..	5,116,757	137,435	3,075,655	74,613	1,920,971	55,033	1,066,980	33,059	263,282	6,865	196,258	5,585
Other countries.....lbs..	1,043,442	21,936	841,346	16,293			18,778	443			60,075	1,300
Total.....lbs..	6,160,699	159,371	3,917,001	90,906	1,920,971	55,033	1,085,758	33,502	263,282	6,865	256,333	6,885
Salt:												
Imported from—												
West Indies—Dutch.....lbs..	10,578,285	11,281	3,466,964	2,158	12,605,478	13,610	5,909,853	5,332	2,207,435	1,856	871,100	791
Other countries.....lbs..	716,038	1,057	348,441	839	444,915	937	434,426	529	521,540	637	249,757	324
Total.....lbs..	11,294,323	12,338	3,815,405	2,997	13,050,393	14,547	6,344,279	5,861	2,728,975	2,493	1,120,857	1,115
Silk, manufactures of.....		20,939		17,865		11,406		11,334		7,033		12,693
Spirits, wines, and malt liquors:												
Malt liquors—												
Imported from—												
Germany.....galls..	14,343	9,967	26,456	19,171	25,274	19,180	15,279	11,499	10,204	13,596	24,041	16,936
Other countries.....galls..	8,012	5,573	4,707	3,424	1,335	932	8,808	4,144	2,110	1,414	2,578	1,739
Total.....galls..	22,355	15,540	31,163	22,595	26,609	20,112	24,087	15,643	21,314	15,010	26,619	18,675
Spirits, distilled—												
Imported from—												
France.....pf. galls..	2,275	7,421	3,302	10,418	4,049	12,748	3,130	10,263	3,729	12,463	4,659	15,211
Other countries.....pf. galls..	1,346	2,380	1,990	3,602	3,039	4,751	2,174	3,559	1,465	2,646	1,945	3,191
Total.....pf. galls..	3,621	9,801	5,292	14,020	7,088	17,499	5,304	13,822	5,194	15,109	6,604	18,402
Wines—												
Imported from—												
France.....		5,363		8,860		15,038		11,673		11,941		28,431
Spain.....		27,553		49,183		29,270		21,030		24,413		23,572
Other countries.....		2,632		2,200		3,566		9,102		11,821		14,173
Total.....		35,548		60,243		47,874		41,805		48,175		66,176
Total spirits, wines, and malt liquors.....		60,889		96,858		85,485		71,270		78,294		103,253

COMMERCIAL PORTO RICO IN 1906.

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IMPORTS AND EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE INTO AND FROM PORTO RICO DURING THE YEARS ENDED JUNE 30, 1901 TO 1906, SHOWING PRINCIPAL COUNTRIES FROM WHICH IMPORTED AND TO WHICH EXPORTED—Continued.

IMPORTS—Continued.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Vegetables:												
Beans and dried pease—												
Imported from—												
Spain.....bush..	26,926	Dollars. 52,275	31,842	Dollars. 77,584	30,375	Dollars. 82,045	13,751	Dollars. 32,994	14,584	Dollars. 35,452	6,300	Dollars. 17,411
Mexico.....bush..												
Other countries.....bush..			594	955	3,643	6,091	5,547	9,435	5,207	9,931	564	21,855
Total.....bush..	26,926	52,275	32,436	78,539	34,018	88,136	21,179	45,855	25,123	57,974	15,346	40,706
Onions—												
Imported from—												
Spain.....bush..	23,499	19,498	38,895	29,829	36,296	35,702	26,520	26,991	16,204	12,443	35,476	29,629
Canary Islands.....bush..			5,761	5,965	12,295	8,826	26,468	26,939	19,273	20,356	21,470	25,880
Other countries.....bush..	852	729	1,817	2,687	554	573	2,575	3,425	1,136	1,464	5,025	4,896
Total.....bush..	24,351	20,227	46,473	38,481	49,145	45,101	55,563	57,355	36,613	34,263	61,971	60,405
All other.....		68,714		91,236		86,519		89,076		75,538		71,760
Total vegetables.....		141,216		208,256		219,756		192,286		167,775		172,871
Wood, and manufactures of:												
Imported from—												
Nova Scotia, New Brunswick, etc.		22,501		45,700		39,373		47,179		68,539		82,395
Other countries.....		11,784		8,274		9,283		8,849		11,978		26,643
Total.....		34,285		53,974		48,656		56,028		80,517		109,038
Wool, hair of the camel, goat, alpaca, and other like animals, manufactures of:												
Imported from—												
France.....		9,437		7,045		7,990		5,857		4,415		10,247
United Kingdom.....		24,315		14,323		14,064		7,707		7,453		4,521
Other countries.....		5,810		6,642		2,789		7,406		1,454		2,828
Total.....		39,562		28,010		24,843		20,970		13,322		17,596
All other articles.....		256,428		274,584		282,502		244,763		292,654		379,844
Total value of mer- } free..		37,791		86,642		45,744		84,620		464,737		247,001
chandise..... } dut..		1,914,937		2,240,315		2,157,697		1,874,349		2,097,452		2,355,783
Total value of imports of merchandise.....		1,952,728		2,326,957		2,203,441		1,958,969		2,562,189		2,602,784
Brought in American vessels.....		9,850		11,038		11,015		142,540		370,357		633,674
Brought in foreign vessels.....		1,942,878		2,315,919		2,192,426		1,816,429		2,191,832		1,969,110

DOMESTIC EXPORTS.

Animals:												
Cattle—												
Exported to—												
West Indies—												
British.....no..	1,167	56,328	1,216	54,945	870	41,470	750	36,089	1,052	48,797	424	18,717
Cuba.....no..	10,446	353,525	11,215	264,068	8,887	173,564	11,817	256,323	7,021	154,087	6,588	127,472
French.....no..	1,023	41,427	804	31,562	570	26,152	221	12,629	24	1,140		
Other countries.....no..	193	6,703	122	3,490	949	50,464	277	11,090	88	2,631	149	4,490
Total.....	12,829	457,983	13,357	354,065	11,276	291,650	13,065	316,131	8,185	206,655	7,161	150,679
Horses—												
Exported to—												
West Indies—Cuba.....no..	2,309	64,966	1,790	44,491	1,437	28,229	3,975	93,131	2,209	59,004	717	20,399
Other countries.....no..	229	9,419	103	4,814	37	1,282	47	1,785	125	5,832	26	1,250
Total.....no..	2,538	74,385	1,893	49,305	1,474	29,511	4,022	94,916	2,334	64,836	743	21,649
All other.....		44,389		14,907		1,883		6,689		9,441		905
Total animals.....		576,757		418,277		323,044		417,736		280,932		173,233
Breadstuffs:												
Corn—												
Exported to—												
West Indies—												
British.....bush..									10,220	7,590		
Cuba.....bush..	4,267	2,173	3,353	2,263							12,759	11,390
Dutch.....bush..	1,843	813	5,094	2,492	452	276	2,416	1,591	13,021	10,645		
Other countries.....bush..			2	1					12,507	11,221	477	412
Total.....bush..	6,110	2,986	8,449	4,576	452	276	2,416	1,591	35,748	29,456	13,236	11,802
All other.....						416		405		125		500
Total breadstuffs.....		2,986		4,756		692		1,996		29,581		12,302

IMPORTS AND EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE INTO AND FROM PORTO RICO DURING THE YEARS ENDED JUNE 30, 1901 TO 1906, SHOWING PRINCIPAL COUNTRIES FROM WHICH IMPORTED AND TO WHICH EXPORTED—Continued.

DOMESTIC EXPORTS—Continued.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Coffee, green or raw:												
Exported to—		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>
Austria-Hungary.....lbs.	386,158	55,979	2,629,339	342,071	2,217,386	267,499	3,898,731	469,778	754,956	102,073	2,030,997	274,932
France.....lbs.	3,348,025	458,047	12,530,220	1,471,631	11,058,791	1,271,914	13,664,219	1,563,787	2,986,883	373,660	4,970,686	617,893
Germany.....lbs.	493,891	71,241	2,167,789	258,050	2,669,519	310,741	2,968,853	327,625	278,659	33,339	930,124	111,342
Italy.....lbs.	611,033	88,874	1,632,780	220,988	2,085,445	259,196	1,479,186	184,075	1,018,544	139,319	1,604,693	209,595
Spain.....lbs.	2,590,096	358,553	4,640,969	533,091	6,749,321	743,818	5,424,747	615,363	3,990,730	521,234	6,234,276	792,313
West Indies—Cuba.....lbs.	4,633,538	633,125	2,678,700	293,256	3,534,023	345,489	4,060,038	411,770	6,242,120	760,221	11,739,124	1,376,175
Other countries.....lbs.	64,934	8,641	399,042	49,544	498,514	53,386	418,639	51,398	58,698	9,521	576,967	71,783
Total.....lbs.	12,127,675	1,674,460	26,678,839	3,168,631	28,812,999	3,252,043	31,914,413	3,623,796	15,330,590	1,939,367	28,086,867	3,454,033
Cotton, unmanufactured:												
Exported to—												
United Kingdom.....lbs.									107,727	31,600	315,837	75,250
Other countries.....lbs.			1,346	104					6,914	916	81,243	19,965
Total.....lbs.			1,346	104					114,641	32,516	397,080	95,215
Fruits and nuts.....		5,022		4,854		5,520		6,881		5,053		6,164
Hides and skins, other than fur skins:												
Exported to—												
France.....lbs.	78,176	7,994	44,935	5,289	6,802	1,019	61,757	7,563	20,671	2,434		
Germany.....lbs.	997	97	3,826	387			48,194	5,718	3,740	497	19,937	2,990
Spain.....lbs.	252,783	34,409			11,922	1,775	4,965	742	4,934	625	3,521	484
Other countries.....lbs.	160	66	56,001	7,980	1,600	132						
Total.....lbs.	332,116	42,566	104,762	13,656	20,324	2,926	114,916	14,023	29,345	3,556	23,458	3,474
Seeds:												
Exported to—												
Germany.....				688						4,509		3,940
United Kingdom.....										9,900		14,100
Other countries.....		81		4						860		8,514
Total.....		81		692						15,269		26,554
Starch:												
Exported to—												
West Indies—												
Cuba.....lbs.	47,069	1,822	3,313	89					938,750	27,161	296,852	10,308
Danish.....lbs.									30,110	851	3,040	62
Dutch.....lbs.	5,234	144	1,014	20					12,140	272		
Total.....lbs.	52,303	1,966	4,327	109					981,000	28,284	299,892	10,370
Straw and palm leaf, manufactures of:												
Exported to—												
West Indies—												
Cuba.....		60		50		402		450		1,405		1,147
Dutch.....						1,028		2,906		4,940		2,553
Santo Domingo.....		2,527		474		1,724		2,082		2,302		1,004
Other countries.....		108		231		2,418		2,776		4,439		3,291
Total.....		2,695		755		5,572		8,214		13,086		7,995
Sugar and molasses:												
Molasses—												
Exported to—												
Canada.....galls.	1,616,400	341,699	1,432,301	249,702	1,503,565	287,813	1,661,065	313,211	1,768,952	324,839	937,343	166,408
West Indies—British.....galls.			33,766	6,734								
Other countries.....galls.	260	48	150	25							1,283,250	41,709
Total.....galls.	1,616,660	341,747	1,466,217	256,461	1,503,565	287,813	1,661,065	313,211	1,768,952	324,839	2,220,593	208,117
Sugar, brown—												
Exported to—												
Denmark.....lbs.	567,873	18,697			33,809	1,099	34,943	971				
Spain.....lbs.	9,266	409	3,029	122	28,335	1,128	20,229	706	3,990	173	7,250	264
West Indies—Danish.....lbs.	29,385	1,120			6,000	210						
Other countries.....lbs.	9,120	281	2,558	91	3,480	106	7,281	186	1,135	56	1,838	84
Total.....lbs.	615,644	20,507	5,587	213	71,624	2,543	62,453	1,863	5,125	229	9,088	348
Sugar, refined—												
Exported to—												
Spain.....lbs.	1,312	97									1,244	55
Total.....lbs.	1,312	97									1,244	55
Total sugar and molasses.....		362,351		256,674		290,356		315,074		325,068		208,520
Tobacco, and manufactures of:												
Unmanufactured—												
Leaf—												
Exported to—												
Belgium.....lbs.					14,879	1,362	9,598	922	10,429	969	24,822	2,573
France.....lbs.			6,984	559	537,815	21,495	171,605	4,781	99,220	5,103		
Germany.....lbs.	491,735	56,577	773,452	57,845	745,518	30,601	422,092	14,357	180,705	8,321	22,303	1,395
Gibraltar.....lbs.	29,095	2,516			95,259	5,214	107,896	4,302	23,503	1,514		
Spain.....lbs.	3,503,527	170,611	34	60	170	50						
Other countries.....lbs.	13,445	2,378	79,407	4,156	10,213	1,055	8,065	931	3,691	323	312	100
Total.....lbs.	4,037,802	232,082	859,877	62,620	1,403,854	59,777	719,256	25,293	317,548	16,230	47,437	4,068

COMMERCIAL PORTO RICO IN 1906.

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IMPORTS AND EXPORTS OF PRINCIPAL ARTICLES OF MERCHANDISE INTO AND FROM PORTO RICO DURING THE YEARS ENDED JUNE 30, 1901 TO 1906, SHOWING PRINCIPAL COUNTRIES FROM WHICH IMPORTED AND TO WHICH EXPORTED—Continued.

DOMESTIC EXPORTS—Continued.

ARTICLES.	1901		1902		1903		1904		1905		1906	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Tobacco, and manufactures of—Con. Unmanufactured—Continued. Stems and trimmings— Exported to—												
France.....lbs..	39,767	<i>Dollars.</i> 3,977		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>		<i>Dollars.</i>
Germany.....lbs..	65,139	4,982	111,925	7,322								
Gibraltar.....lbs..	35,863	2,925	72,899	4,077								
Spain.....lbs..	254,294	10,534	341,685	26,420								
Other countries.....lbs..	440	16	698	40								
Total.....lbs..	395,503	22,434	527,207	37,859								
Manufactures of— Cigars—												
Exported to—												
West Indies—Danish.....M..	716	7,991	605	5,509	608	5,534	323	3,740	286	3,165	322	3,864
Other countries.....M..	102	2,103	20	413	115	1,778	73	1,972	106	2,040	36	786
Total.....M..	818	10,094	625	5,982	723	7,312	396	5,712	392	5,205	358	4,650
Cigarettes—												
Exported to—												
West Indies—												
Danish.....M..	205	643	300	1,623	156	318	235	464	421	587	180	333
Dutch.....M..	836	816										
Other countries.....M..	202	410	127	195	126	266			65	89	7	12
Total.....M..	1,243	1,869	427	1,818	282	584	235	464	486	676	187	345
Total tobacco, and manu- factures of.....		266,479		108,279		67,673		31,469		22,111		9,063
All other articles.....		32,442		35,551		9,671		17,289		26,890		53,671
Total exports of domestic merchandise.....		2,967,805		4,012,338		3,957,497		4,436,478		2,721,683		4,060,594
Total foreign exports.....		34,874		42,852		80,387		106,599		354,737		54,475
Total exports.....		3,002,679		4,055,190		4,037,884		4,543,077		3,076,420		4,115,069
Domestic and foreign merchandise:												
Carried in American vessels.....		16,255		18,391		11,692		14,329		23,077		363,080
Carried in foreign vessels.....		2,986,424		4,036,799		4,026,192		4,528,748		3,053,343		3,751,989

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